Corrugated "Perspex" is made with the same corrugations as standard roofing materials so that it can be slipped into position in walls or roofs to let in light without the necessity of framing or flashing.

Although corrugated, "Perspex" is simple to fix. These points are worth noting. Bolt holes should be drilled and not punched. A clearance of ½ inch over bolt diameter should be made and a flexible "Welvic" washer between the metal washer and the "Perspex" is recommended (see diagram).

Standard twist drills are satisfactory, preferably with the point ground rather flat for a clean underneath cut. Sawing can be done by band or circular saw—for hand cutting use a fine-toothed saw such as a hacksaw. Overlaps for end or side laps are the same as for standard material, except that in single sheets it is desirable to fix the sheet so that it rests on top of the adjoining sheets on both sides for neater fit and better support. The 2 5/8 inch and 2 5/6 inch corrugations are obtainable with an extra turn down half corrugation for this fitting.

For further information and technical advice write to:

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Design Review is published bi-monthly by the Architectural Centre Inc., Wellington, and produced voluntarily by a group of people interested in good design. It is not produced for profit, and because of the aim of maintaining a high standard of illustration and printing, the publishers have difficulty in meeting production costs. If you are interested in furthering the improvement of design in New Zealand you can assist by introducing new subscribers.

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for "MADE TO MEASURE" FURNITURE

FURNITURE FASHIONS
40 Willis Street, Wellington.
Untapped Riches

Having a large basement, I naturally have it piled up with every sort of discard—old bits of furniture, old suitcases, beer bottles (empty), an old bed (for emergencies), and a bicycle tire. One of my recent clean-outs resulted in sending some of the furniture to the auction mart—a perfectly good sideboard (solid oak), an elegant if rather tattered upright chair, a music stool with carved legs and embroidered seat, and a large oval mirror in stand, suitable only for very stuffy boudoirs. The sideboard, the only really useful piece, will not sell, the chair went for four shillings, and the stool im twenty-five shillings. With the cunning that only a second-hand dealer knows, the mirror and stand were placed on the stage, labelled ‘Paul Duval’, and sold for six pounds.

Not Wanted

The Wellington City Council have two pieces of machinery on their hands. Finding a place for them keeps one half of the city amused and the other half exasperated. Sites for the multi-coloured and multi-jet fountain, in storage since the Centennial, have been found in every open space around the city—even at one stage, in the harbour. But, thank goodness, it remains in storage. The other object is the city clock, which has been without a tower since the 1942 earthquake flattened the Post Office skyline. The Council has decided to place it on the tower of a high city building, at a cost of £4,000. It is not that a clock is needed—there is already a good one outside the Post Office just down the street that serves very well—but of having a four-faced clock and nowhere to face it.

A National Trust?

The issue before last of Design Review contained a plea for legislation to preserve buildings and places of historical importance. A Bill has recently been before Parliament for this very purpose, but Design Review was a bit late to claim any credit for that. I was rather disappointed in the Bill; it did not seem ambitious enough. No funds were to be provided for actual preservation, and no powers to prevent actual demolition or alterations. I fear that the Bill will lead to no more than lists being prepared. A start, and a good one; but why be so timid?

Heating the House

Mr. K. E. F. Grenny’s article in the last issue of Design Review brings to mind again our backwardness in house-heating. While we pride ourselves on a high living standard we are prepared to live in draughty and partly heated houses. But Mr. Grenny points out that we lose most of the heat we do generate, by lack of insulation. Of course, it has always been a question of not having a reasonably priced insulating material on the market even if we were prepared to use it. Such materials are now available, and the costs appear to be reasonable, especially when compared with the cost of fuel. However, Mr. Grenny made no mention of insulating floors. By-law requirements for ventilation under houses are so generous that there is always a wind whistling through under the floorboards ready to lift up the carpets if it can find a chink in the joints. But the use of slag wool in walls and ceilings would in itself be well worth the added initial cost. In fact, tests have shown that the extra cost of insulating walls and ceilings will be saved in three to five years on the fuel bill. So far as the floor goes, lay it in concrete or put down a layer of building paper under the felt.
A HOUSE AT AVONDALE

by Group Architects (James Hackshaw)

Here is a house for a family to live in. The owner decided that unencumbered floor space was essential for a house that would be more than a place to come home to each night. The architect was able to plan following a pattern of living—not merely the pattern of houses past and present.

The result has been a spacious and easy-to-run house. The editors feel that new experience has been added to the design and building of the house in New Zealand. It is simple and at the same time exciting.

Since builders often are wary about new types of construction, and cover themselves in their prices, the owner engaged labour and became the contractor himself. The construction proved far cheaper than normal types; the whole house of 1,800 square feet without builders' profit cost £3,800, £2 2s. per square foot.

Planning.—The factors considered in the planning were (concurrent with method of building and cost) eventual family of parents and three children; flat site with a view down a creek to the N.-W.; wind and neighbouring houses and some high blue gums to the south; a car and a piano.

The entrance is from the east. Opening the door, you walk down a bluestone floor between the wall and the garage, looking down the length of the house through to four glazed doors in the far wall and beyond. At the end of the garage the space...
suddenly opens up to the full width of the house and overhead to the full height of the two storeys. This large carpeted space is where the family lives. The returns of the brick walls under an 8 ft. ceiling at the west side of the house form areas for the piano and the divans. The glass between (four 8 ft. high glazed doors) opens out on to a future terrace which will be on the bank of a creek lined with trees. From the divan there is a long view down the creek.

The dining table is under a seven-foot-wide gallery which is also the connecting link between the bedrooms. There are 8 ft. high plate glass doors here too, and above, on the north and south walls, are large areas of glass set in the wall in the same way as glasshouses are glazed. The high glazing allows the sun to enter back into the two-storey part of the living area, warming the house, while the balcony prevents direct sun reaching the dining table.

A view of the tops of blue gums can be seen through the high cathedral-like windows to the south. Glass here stops 8 ft. from the floor, as neighbouring sections would otherwise look straight in.

The kitchen is in the same wall as the entrance but on the other side of the garage. There are plenty of cupboards, painted white, and a white refrigerator. Washing is done in a Bendix in the kitchen, thus saving the space usually occupied by a laundry.

The bathroom is immediately above the kitchen, and all plumbing and vent pipes go into the garage—a factor in keeping the clean appearance of the walls.

The north boundary of the section is being planted in fruit trees and natives—flax, cabbage trees and tapa, affording a degree of privacy and a fine view while having your meal.

At the top of the stairs is the gallery connecting the two parts of the upper storey. This gallery is 7 ft. wide, which allows plenty of room for chairs and has 2 ft. deep cupboards and shelves along the wall.

To the west is the children's sleeping area—the full width of the house and 10 ft. wide—capable of being divided up into a number of sleeping alcoves.

The parents' bedroom, on the other side, has a separate dressing space. This bedroom, from which one of the photographs was taken, has a 3 ft. high by 7 ft. long work bench instead of a full-height wall on the west side, so that from the bedroom you can see across to the opposite wall of the upper floor space and down to the living space below.

There are high windows along the top of the east and west walls.
giving light into bedrooms and bathroom. These are strips of 2 ft. glass joined by lead cames. Ventilation along these walls is by hinged flaps between the 8 ft. x 2 ft. rafters. North and south walls are ventilated by vertical 8 in. x 1 in. cedar hinged flaps.

This is a large house and more open in its plan than is usual even to-day. The problem of heating was important, since there is no small room to be enclosed and heated by itself. It became a matter of heating the whole area of the house. An open fire obviously would not do this without burning whole forests at a time. Central heating would have been too costly. Success was achieved, however, by placing a large slow-burning combustion stove fairly near the centre of the house. By this means it has been proved possible to heat the whole house in half an hour.

**Construction**

**Ground Floor.**—Concrete floor with bluestone extending from entry right through to west fin of 42 ft. south brick wall—concrete is covered with carpet. Eight-foot-high brick cavity walls with timber frame on top.

**First Floor.**—4 in. thick 'mill' (or solid) floor (4 in. x 2 in.'s dressed all sides and nailed together, the bottom forming the ceiling to ground floor). The mill floor is supported by 12 in. x 4 in. oregon beams which extend through the west wall 7 ft. to support the verandah to the future terrace.

**Roof.**—8 in. x 2 in. rafters at 3 ft. 8 in. centres with diagonal pine sarking, dressed face down. The sarking forms the ceiling. A similar finish has been used for internal partitions. The roof covering is impregnated asbestos fabric laid on top of the sarking.

The doors to the ground are 8 ft. to the underside of the floor. The joinery for the doors and windows is simple and inexpensive.

The owner, Mr. Kevin George, is to be congratulated on his awareness of the possibilities that can be realised in a fresh and imaginative approach to house design at the hands of an able architect.

Mr. James Hackshaw has recently gone to France on an architectural scholarship granted by the New Zealand Government.
to shroud their activities has been torn aside in several places. It is safe to say that even well informed enthusiasts will be surprised at the number of recordings bearing English catalogue numbers, of whose existence they were unaware. Certain complicated issues are set forth in tables that might have strayed from the Kinsey Report — there are, for instance, elaborate listings showing just what portions of Tchaikovsky's 'Sleeping Beauty' and 'Swan Lake' ballets have been included in the many current versions. The amount of research and scholarship which has gone towards accurate identification, especially where the earlier composers are concerned, staggers the imagination.

The authors themselves are the first to allow that there must inevitably be omissions, inconsistencies and errors, and indeed they earnestly appeal to their readers for corrections or for details of discs somehow omitted, so that they may be incorporated in future editions. There are at least two surprising omissions, that of Gavin Gordon, whose 'Rakes Progress' once available in abridged form on two Colobbies, will surely be before the attention of the British public for as long as the Sadlers Wells Ballet services, and Benjamin Frankels, whose solo violin sonata is recorded by Decca. You will not find Liburn, but John Antill and Frank Hutchens are there, and the Allred Hill records make an impressive showing. Strange and intriguing releases meet one on every page — did you know there is a recording of Schubert's 'Unfinished' conducted by His Majesty the King of Denmark? You may also read of a Saint-Saens concerto recorded only in Japan, of a Dittersdorf concerto available nowhere save in the Argentine. Pieces that have been recorded ad infinitum are tabulated with unflagging zeal. Our sympathy goes out to the authors as they list the sixty odd vocal versions of Schubert's 'Ave Maria'. But a sense of humour has not deserted them and I cannot think it just co-incident that in this particular listing Benjamin Gigli is found next door to Bobby Breen.

The most heart-breaking aspect of any such work is that it goes out of date long before publication. Since the advent of L.P., records have poured out in a flood and several works listed here as 'not recorded' have subsequently materialised. The main body of the encyclopaedia lists all issues up to mid 1950, an incorporated supplement brings us a year further on and this includes nine pages listing the impressive flood of Bach recordings which stemmed from the 1950 observances. Supplements are to follow at regular intervals. Most valuable among the additional features of this book is a series of tables showing the lettering and numbering systems used by the major record manufacturers.

The price may be considered high, but half and hour spent with the encyclopaedia causes one to reflect that it might have been even higher. As an American reporter said, this is the 'disc bible', a production both unique and indispensable.
RADIANT PANEL HEATING

Heating has always been a problem for man, perhaps because the body endures extremes of light and sound without undue discomfort, but against extremes of heat and cold it has no defence. To-day heating engineers are examining not only how to make better heating machines, but also the physical reasons for feeling comfort and discomfort. Experiments have found that comfort is based on four environmental factors—air temperature, radiant temperature, humidity and air movement. These have their effect on the body, which normally manufactures more heat than it requires, storing it to release it at a steady rate later. Comfort, then, depends on controlling this heat loss, and in winter this means making up for the lower temperatures of the surrounding air. It does not necessarily mean altering the air temperature; for so long as heat loss and gain are about equal the body is comfortable. For instance, if we drop the air temperature the body will lose more heat than comfort will allow, and to counteract this we can step up the temperature of the surroundings so that they radiate heat to the body, making up for that loss. To a limited degree an increase in the humidity and a reduction in the movement of the air can bring about the same effect. Humidity, however, in the normal zone of comfort has little effect, and we can disregard air movement, so that we find the most stable form of compensation is by radiant heating. This gives us freedom and flexibility in the other three factors and allows a greater range of activity to be carried out in comfort.

Radiant heating operates on the principle that heat-emission from low-temperature panels gradually warms up the surrounding unheated surfaces, until radiation from the body to the cold walls is reduced to a comfortable level. This does not have the effect of overheating on one side of the body and chilling on the other. From experiment it has also been found that not only is there little temperature variation from floor to ceiling but that there is little or no drying of the air.

A new type of low-temperature electric heating panel, called ‘Medrae’, has recently been introduced into New Zealand, giving the advantages of economy and safety combined with the other qualities of radiant panels. Probably its greatest attraction for architects who are familiar with radiant heating will be the flexibility it gives in heating arrangements.

There are two forms available here at the moment, both similar in appearance to a ½” sheet of hardboard giving a plain or mottled brown appearance. They are of a laminated construction with the element embedded between the two layers and the electrical connections are so arranged that there is no possibility of shock even when water is spilled over them.

They can be placed in short strips or arranged in the form of a continuous dado installation, or they can be treated as the normal wall or ceiling surface, and where only sufficient are used for heating the rest of the surface can be covered with dummy panels.

Individually they can be placed under desks in the office or for local heating in the bathroom and drying cupboard.

Summary:
- Total cost of installation is relatively low. Reduced running costs due to low current consumption.
- No risk of fire or accidents to children and old people, as the surface temperatures of the panels range from 150 deg. F. to a maximum of 170 deg. F. No chance of shock.
- Gentle radiant warmth giving good comfort conditions.
- No drying of the air and no stuffiness.
- Range of wattages and sizes to suit almost any heating problem.
- Flexible in arrangement with the decoration.
- Can be painted with distemper, stain or leadless paint—care to be taken that lead-base paint is not used, as it has been found unsatisfactory.

Medrae Installation in Finaghy School, Belfast.
SUNROOMS AND A GARDEN

E. A. and Anna Plischke

This is a large and elegant house near Wellington, with a fine view towards south and south-east. After a few months of living in it the new owners of the house were considering selling it because it had become apparent that the first owner had preferred view to sun and that no mid-day or afternoon sun could penetrate either the living, dining or bedrooms through the 11 in. thick almost windowless brick walls.

In the end, however, the new owners decided on another course: Part of the first floor of the house was taken down. The house was opened towards the sun by big openings, the floor above being supported by new concrete beams. New living room, bedroom, bathroom, sunroom and sundeck were built. The new part of the house is quite independent of the neo-Georgian style of the old part. It is built in timber to achieve the utmost lightness in structure. Excepting posts and bracing, the outside walls of the new part are glass. Soundproof folding walls between living and sunroom provide flexibility for social occasions.

A sliding door 9 ft. wide and 9 ft. high and glass walls down to the floor help to diminish the distinction between indoor and outdoor living.
Previously this part of the garden served as a drive to the main entrance; the rest of it was a high hill formed by the spoil from the excavation of the house when it was built. A few big pines and other trees were growing haphazardly on it. The previous owner was not interested in this part, and spent his time on the rest of the garden. In re-making the garden two possibilities offered themselves: one was the normal course of making a neat and formal approach to an elegant house, with lots of lawn, etc.

But, on the other hand, since one of the owners is a keen gardener and quite prepared to take some trouble, and since this is the sunny part of the garden and is just in front of the new rooms, it seemed worth while laying out a garden directly related to the new part of the house. The area is not big, but it is completely filled with flowering plants and flowering shrubs which make an agreeable show all the year round. The drive has been reduced to a minimum, and by paving part of it has been linked up with the other garden terraces.

A lay-out and grouping of the garden around the house into different courtyards and terraces gives shelter and sun space for outdoor living even in the winds of Wellington. The sunroom forms the core of the layout, and its proportions are related and interlocked with the courtyard, the steps and terraces. The character and feeling of the new rooms also penetrates to the other rooms which have not been altered; for instance, the bedroom shown in the photo. The new sundeck enables the owners to walk out into the open and enjoy morning sun and view without having to go downstairs.

And now about the garden itself: One often asks why people like gardening—a difficult question to give a general answer to, because the replies are so many and various. There are, of course, very many reasons; for my own part, I like a garden to look well in the end—the goal draws one on. But there is more to it than that; I like the various kinds and varieties of plants individually. I like to handle them,
to plant them to their best advantage, to multiply them, even to weed them; in short, to be in their company as much as possible. The garden shown on these pages tries to give an opportunity for that kind of appreciation. It brings the plants near to the rooms, which is where I would always wish to have them.

As one steps out of the big sliding door, one finds one step running all along the whole wall. It is the right height to sit on in the sun and contemplate the garden. The courtyard is paved partly with old mellow bricks and partly with large concrete slabs. Colour has been added to the concrete and the slabs are a kind of burnished pink, which makes them less hard-looking. In party weather people can easily spread out into the open. Between the slabs in several places, various kinds of moss-like plants have been planted.

The courtyard is enclosed on two sides by dry walls about 2 ft. high, and planted with rock plants. On top of the walls are all the various spring bulbs planted in groups. In front the smaller ones like freesias and petticoat daffodils and so on; a bit further back groups of hyacinths, tulips, Spanish, Dutch and English irises, anemones and ranunculus in big groups—in short, everything that flowers in the spring. Further to the left there are shrubs like camellias, azaleas, ericas and many others. (On top of the dry wall, parallel with the sliding door, the space behind the bulbs is planted with rose bushes and behind with delphiniums and regal lilies.)

On the right-hand side there are five very wide and deep steps, leading past the rose terrace and a second higher terrace to a sunken lawn. On the right these steps are bordered by a steep clay bank, on top of which grow some native trees. Into the clay bank we made holes with a chisel and stuck pieces of succulents with a bit of good soil underneath, into them—not an orthodox way of doing things, perhaps, but it works. All in all, the owners say the garden is as easy and pleasant to work in as they find it to look at.
The designer of a book, like the designer of a house or a milk-jug, must be concerned, not only with use, but with pleasurable use; he is dealing with an article that should serve the twin purposes of 'commodity and delight'. The manner in which these two purposes are reconciled is the test of the designer of a book.

Now the first purpose of a book is communication. It exists to enable the reader to obtain from the printed page the thought of the author, whether that thought is presented for information or for entertainment. It is true that this end of communication could conceivably be achieved after a fashion by almost any mechanically-correct presentation of the author's text—even by a photostatic reproduction of his manuscript. It is equally true, however, that a book badly designed or not designed at all can place between author and reader almost every kind of obstacle to communication. The physical features of a book—the paper, the style of the printed letters, the manner in which the type is impressed upon the paper, the imposition or lay-out of the printed matter upon the page, and the binding—all affect both the facility and the pleasure of the act of reading. The function of the book-designer is to ensure that these elements are so handled as to make the reading of the book both easy and pleasurable. He is inevitably concerned it the same time with the utilitarian and the aesthetic, but the aesthetic quality of a book must derive from the fitness of its design to the basic purpose of communication in relation to its own particular text, and must never depend upon added ornamentation, recherche letter-forms, self-consciously 'artistic' imposition of type upon the page, or ostentatiously expensive paper.

Although the approach to a book is from the outside—through the jacket, the binding and the displayed titlepage, the ultimate test of its design is in the manner in which the body of the text is presented. This is seen in an 'opening'—comprising two facing pages of printed text. The proportions used in positioning the two separate masses of printed matter on the white space of the opening are either satisfactory (and therefore scarcely noticed) or they make the reader uneasy by giving an impression of lack of balance or untidiness. The paper on which the pages are printed will also probably attract attention only if it is inferior, or unsuitable for the purposes of that particular book. And a page that is too black with type may repel the reader as much as one that is too pale and grey.

Begin to read the page and the other factors become important—the clarity with which the type is impressed upon the page, the design of the actual letters of the type, the size of the type, the length of lines, the spacing between words and between lines, and the treatment of such elements as headings and page (or folio) numbers.

All these factors are capable of a very wide range of variation. With every one of them there must be a deliberate choice: and unless the choice made in each case is in accordance with a general plan—a design for the book as a whole—the result will certainly be unhappy for the reader. Because few working printers are competent to plan a book satisfactorily this task of design tends more and more to be handled by a specialist designer—the typographer. It should be noted, however, that the book designer's equipment for his task involves, not merely the possession of certain standards of aesthetic taste in relation to the appearance of a page or of a bound book, but a thorough and practical knowledge of the techniques of the printer's craft and of the resources of the printer with whom he is dealing at the moment. He cannot work in isolation: he must know that what he asks for in his design is both possible and reasonable.

Just as an architect must know such things as the living habits of his client, the length of his purse, and the environment in which he proposes to build, before he can plan a house for him, so the typographer, before planning a book, must be familiar with the author's manuscript, and know both the limitations of the investment the publisher is prepared to make in it and the class of reader who will be expected to buy it. The starting point, however, must be the manuscript—whatever else it does, the design must fit the nature and purpose of the author's communication.

Usually the first points to be decided will be the size of page and the nature of the paper on which the book is to be printed. There is no space here to discuss all the factors determining the choice of paper; the paper should, however, be strong, opaque (so that the text printed on one side does not show through to the other) and not tinted or surfaced in any way that will spoil the printing or attract attention away from the text. A glossy or 'art-finished' paper, which has to be used for printing photographs reproduced by the half-tone process, gives a text page which is very difficult to read. The use of such glossy paper cannot normally be avoided, however, where photographic illustrations have to be reproduced (as in some textbooks) on the same pages as text matter. The alternative of printing such books by lithography, which does not require a glossy paper, is very rarely available to the designer, because the high cost of the lithographic process can be justified only with editions of very much larger numbers than the New Zealand market will normally absorb. A further obstacle is that, of all books, textbooks are those which are most con-
stantly revised when reprinted, and with lithography textual revision is more difficult and more costly than with letterpress printing. With the normal book, however, it is best to print the text on unsurfaced paper, introducing photographic illustrations on separate pages or sections of art-surfcaced paper.

The size of the page must be decided at the same time as the nature of the paper, the length of the manuscript and the purpose of the book being the determining factors. A short manuscript printed on a large page in a normal size of type will make a slim book. It can be bulked a little by using a thicker (or bulking) paper—but unduly thick paper can be very unpleasant. There are limits also to the size of type that can be used. Alternatively a long manuscript printed on a small page is likely to make a fat and awkward book. Readers tend to prefer books and the paper they are printed on to run to neither extreme. They also expect the pages of certain kinds of books to be of certain sizes—popular novels to be crown octavo (7¼ inches by 5 inches) and general literature to be demy octavo (8½ inches by 5½ inches). But there is no hard-and-fast convention about this. It should be noted also that the designer’s choice of the size of page in relation to the length and nature of the manuscript will be affected by his views concerning the kind and size of type suitable for the book, and the way that type is to be used on the page.

The attractiveness of a page or of an opening is very closely dependent on the treatment of margins, which determine the extent and proportion of what is known as the type area and its position on the page and in the opening. The general rules of proportion have to be followed, the margins diminishing from the widest at the foot of the page, with the outside margin next, followed by the head margin, and finally the inner or gutter margin. Although the inside margin should be narrowest, it should still not be so narrow that the fold of the page obscures the text. Unbalanced or too narrow margins oppress the reader; excessively wide ones tend to give the impression that the page is meant to be admired for itself and not to be read.

The selection of type suitable for a book, however, involves much more than a decision about size. Until differences are pointed out to them, most readers do not realise that there are many families of type, each different in design, and each producing its own distinctive look on the page, and that these differences provide one of the main reasons why some books are easy to read and others are not. Because the purpose of type is to be read—because it is an intermediary to communication—its first requirement is that its design—the shapes of individual letters, and the way they fit together—shall be unobtrusive. The letters of a book type-face should not call attention to themselves either by over-simplification or by over-emphasis, or by any other wide departure from those general features which make up the norm of our experience of reading the printed page. They should not be coarse and heavy, producing too dark a page; nor should they be grey and thin. The features or proportions of letters should not be exaggerated. In reading our own language after we have left the infant school we read, not by tracing the outline of each individual letter, but by a general recognition of the shape of words (or of word groups), being assisted in quick recognition by the position in a word shape of the distinguishing features of some of the letters—the tails and the finishing strokes (serifs) of such descending letters as p, j, g, the upper strokes of d, l, k, b, and by the backward opening of a. This is one of the reasons why a succession of full pages of sans serif types, with all strokes in all letters heavy and of almost uniform thickness, is extremely tiring to read. A page set in a type in which each letter sets out to be decorative is equally fatiguing. Types designed for newspapers, even when used in larger sizes, also make a difficult book page, because such types are usually condensed and black and have shortened or squeezed-up descendes, made necessary by the space-saving demands of newspaper typography. The use of such types is one of the reasons why books produced in New Zealand by newspaper printing works (and by other printers also) are usually unsatisfactory.

Many true book types, the outcome of the renaissance in type design that has taken place in England in the last thirty years, are nowadays available even in New Zealand. Which of them the designer will use will depend on his personal preference and his conception of the final appearance of the book, and, of course, the resources of his printer. The best way of assessing the differences between these types is by comparing complete pages of text.

After selecting his type-face, the designer must decide how it is to be used within the type area. His aim must be legibility and attractiveness, avoiding fussy ostentation as much as timidness or overcrowding. The length of line having been determined by the decisions already reached concerning size of page and margins, he is to a certain extent limited in the size of type he can use, for the size of type must be suited to the length of the line. A long line of small type can be very difficult to read, for the eye-span—the number of words the eye can take without shifting its focus—does not increase strictly in proportion as the type becomes smaller. Too large a type on a short line can be almost as tiring, for the eye has consciously to be shifted to the next line before it is ready.

Choosing a suitable size of type for the length of line, however, does not necessarily solve the problem of legibility. Within the type area there is still scope for variation—legibility is considerably affected by the amount of white space between the lines. The lines of type may be set closely together (solid) or spaced out (leaded). With some type-faces the letters are small but have long ascending strokes. These give a considerable amount of white space even when set solid. Others are greatly improved by a little leading between the lines. Leading is particularly useful when the designer is condemned to use very small type. It can easily be overdone, however, and then produces a page in which the type appears like thin grey lines on a sea of white. It is equally important that the words in each line should be set closely together, for wide spacing, still too common
with many linotype operators, tends to produce rivers of white down the page.

A style has also to be determined for handling such elements as running headings at the top of the page, and the page (or folio) number, together with any section headings or special features which appear in the text—such, for example, as quoted extracts, whether in verse or prose, and tabulations. In handling all these things the designer has to remember that, in a book, he is not dealing with a single page or even a single opening. Headings, for example, or other type elements serving a similar purpose, must be consistently styled in a similar fashion throughout the book.

The treatment of words requiring to be set in a special fashion to give emphasis is a constant pitfall. Many people seem to think that the only way to give emphasis within the text is to set words in black type, or to underline them. Fortunately underlining in a book is usually impossible for mechanical reasons. The use of black type is also in most cases an unsatisfactory solution of the problem. Without going to this extreme, the typographer has at his disposal, to give varying degrees of emphasis, not only italic and \textit{ITALIC} capitals, but \textit{LEVEL SMALL CAPITALS}, as well as \textit{CAPITALS AND SMALL CAPITALS}, and finally \textit{CAPITALS}. This range of five different weights of emphasis should be sufficient for most purposes—in fact, \textit{italic} and \textit{LEVEL SMALL CAPITALS} will provide almost all the variation of emphasis needed within the average text.

Certain pages of books, of course, require special treatment differing from that given to full pages of text. Such are the pages carrying contents lists or chapter openings, or the title page itself. In chapter openings and on the title page an element of display or decoration comes in, but always clarity and good proportion are the qualities chiefly required.

With so many variables to control, it is easy for the typographer to make mistakes. He can readily produce a page that is technically legible, yet completely unattractive. With luck, however, he sometimes succeeds in reconciling the twin aims of legibility and attractiveness. That more well-designed books are being produced in New Zealand nowadays is an indication, not only that the resources of our printers are increasing, but that people are becoming more interested in the appearance of what they read.

\textbf{BEAUTY IN ENGINEERING}

\textit{F. H. Newman}

Works, striking in their forms and of a strange but exciting rhythm, can at present be seen in some of the large hydro-electric constructions built by the Ministry of Works.

The Maraetai power project on the Waikato River was in a most interesting stage some months ago. The photograph of the powerhouse and dam (III. 1), which was taken in January of this year, is a particularly good example. The shapes have an amazing likeness to some of the monasteries built since the 10th century on the Greek islands in the \textit{Ægean Sea}. Simopetra, on Mount Athos (III. 2), is one of these monastic structures.* A picture of the dam with the transformer platform and the penstock (III. 3) reminds us of the fantastic perspectives the Piranesi Brothers conceived during the time of the Baroque in Italy. Illustration 4 shows a typical example of this kind of picture.

Much of these architecturally most impressive concrete structures will have to be submerged so as to serve their purpose. However, the shapes are much too exciting to be passed over unobserved.

There is much matter for thought in these gigantic projects beside their engineering functions and problems which in themselves are of a magnitude without parallel in New Zealand. Our engineers are proud of their work, and rightly so. But is it only the material side of their designs they are so proud of? Does one think only of kilowatts when confronted with such engineering works?
A HOUSE IN KARORI

Architect: H. Einhorn

The Plan on the Site.—The Wellington site for this house had a very strong influence on the form of the plan. There was a steep grade of about 1 in 2, with a westerly aspect. The road which turned a corner at the boundary, however, was able to be used as access to the top and to the bottom of the slope. This made it possible with the aid of the bulldozer to form two steps or terraces. At the lower level was built the garage and workshop, entered by a level drive.

On top of these rooms were built the living quarters, which are then able to open out on to the upper shelf. Thus have been made an open terrace and lawn which are protected by the rock bank of excavation on the north-eastern side and by wings of the house on the southern and western sides.

The gully at the bottom of the slope was filled with spoil from the excavations for a vegetable plot.

Bulldozing proved an economical method of improving a 'low-value' site.

The Plan of the House.—The chief feature is the complete avoidance of internal corridors and dark unusable corners. Thus the 1,150 square feet area is ample for two adults and two children (ages 10 and 7) with full possibilities of additional guest beds and occasional entertaining. There is separate study and work space for each member of the family.

There is a minimum of internal divisions and doors which saves the cost of framing and wall lining and ensures great flexibility in re-arrangements when the household expands or contracts.

The living area is divided into two wings. A large children’s wing to the west, which has double doors to the terrace, provides ideal play space for children and friends. It is planned to be divided into double and single bedrooms off a sunporch later on. Open internal layout separates the children’s activities from the rest of the house without their feeling cut off.

The north-south wing has its entrance in the middle between the dining area and the living room. A HARCO 25 space heater keeps the whole area warm, and the draughts usually present in houses with each room separate don’t exist here.

The kitchen and the dining table
are almost alongside one another, but the view of the preparations of a meal, pots and saucepans, is screened by a bank of cupboards. These cupboards do not extend up to the ceiling and so give a confined appearance to both rooms; rather is the spaciousness increased as the eye can follow the plane of the ceiling beyond the cupboards suggesting the presence of space on the other side.

The living room is entered through a partition lined with ply with a matching flush door. This is a large comfortable room with double doors opening on to the terrace and plenty of glass through which you can see down the valley to the east.

Bedrooms and study for the parents open off the living room and are screened when required by

MATERIALS USED

EXTERNAL SHEATHING:
Weldtex exterior resin-bonded plywood (Dominion Sales Corp. Ltd.), flashed by 'Denso tape' (A. R. Hislop Ltd.).

INTERIOR LINING:
Gibraltar board from Winstone Ltd., one interior wall rimu plywood.

ROOFING:
Three-layer Malthoid with pebble finish (J. A. Redpath and Sons).

FLOORING:
Timber on joists and Eldorado cork tile flooring on concrete in playroom (Odlin Timber and Hardware Co. Ltd.).

CONCRETE:
Concrete by Certified Concrete Ltd.

Door furniture and hardware from G. A. Lang and Co. Ltd.
Washrite washing machine: Electric Refrigeration Ltd.
Neebo electric stove: Smith and Smith Ltd.
Stainless steel sink: Mercer.
Harco 25 oil space heater: J. F. Hargrave Ltd.
Electric heater from Taylor's, Christchurch.
strongly patterned curtains. These three rooms are capable of being completely separated from the rest of the house.

Living in this house has convinced the owner-architect of the even greater effectiveness of open planning where low-cost housing is concerned. The house not only feels and looks spacious; it is in fact very generous.

Visible beams at regular intervals and structural posts throughout the house unify space and add a note of order and firmness as counterpoint to the openness of space arrangements. Space division is further emphasised by the raised floor level of the children's wing. The raising of the floor here also permits afternoon winter sun to enter through clerestory windows.

All plumbing is concentrated in the corner of the house nearest to the sewer drain.

Structure and Cost.—The frame was initially designed on an approximately regular grid of posts and beams at 4 ft. to 5 ft. centres with 1½ in. solid T. and G. roof decking and 2 in. floor planks (see sketch). The large glass areas now commonly demanded would fit this wide grid without further trimming timbers.

However, out-of-date bylaws in this town prevented the application of this modular structure. Subsequent building experience shows that the conventional bylaw structure raised the cost of labour more than the cost would have been for the heavier dressed planks, which would have eliminated the multitude of rafters and the lining of ceilings.

Except for base plates, which are totara, all framing is of Pinus insignis. The exposed and varnished Pinus beams meet with admiration from all visitors.

Concrete floor slab: The floor of the children's wing was cast in concrete direct upon firm ground. It was insulated with 3 in. of clean crushed stone and reinforced building paper (sisalkraft). The concrete itself was of 3,000 lb./sq. in. strength and ¼ in. bituminous emulsion was laid on top. The finish to the floor is Eldorado tiling, which, warm in the winter, entirely eliminates the need for carpets or mats. This has proved a most hygienic and labour-saving floor, and is the relief and pride of the housewife.

This type of floor, in contrast to the suspended floor slab, needs next to no boxing and only dwarf foundation walls. It has proved decidedly economical, and has also the advantage of eliminating the need for steps down to the garden level.

Finish.—The exterior sheathing is resin-bonded Weldtex, a striated (grooved) plywood with matai or white pine veneer. The vertically grooved texture prevents the wind from sweeping water into the joints and guides the rain straight down to the base.

Densol tape, a seccomastic tape inserted behind the joints in the sheathing, seals the entry to the small amount of moisture which may penetrate the joints of closely butted plywood sheets.

The Weldtex received two coats of a mixture of 50 per cent. raw linseed oil and 50 per cent. pure turpentine. It is believed that the addition of a small percentage of boiled oil to the second coat would form a surface film as well as protective penetration.

The basement has concrete walls and asbestos sheets on framing to be finished with a latex base paint.
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Sketch of Initial Structural System

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Sir,

I read your contributor's suggestion that there should be more large blocks of flats in our sprawling cities. There seems to me to be one very good argument for them besides the objection to sprawl. That is, that where gradients are sharp (as in Dunedin) an imaginative architect could use a terraced design and, provided there were enough lifts, tenants on the top storey could enjoy hill air and save their breath. The part of the block running into the hill would, of course, be best used as offices, storage, machinery and garages.

But, generally speaking, high density of population to the acre produces traffic congestion worse than congestion produced by peak travelling to and from suburbs. All the services for persons in the congested area are liable to crowd the streets, and inhabitants on their private errands clash with business, school and industrial demands on transport. In the suburbs you have small local circulation (shopping, friends' calls, books, even amusement) and diminished central circulation of traffic.

Further, I was told that in areas subject to earthquake, the rather sketchy New Zealand bungalow is to be recommended. I am, yours truly, "POMMIE".

[High densities produce congestion only when the city is unplanned—or badly planned. Very high densities and concentration of population, business and industry are possible if modern town planning techniques are properly applied. Corbusier's skyscraper city of three million people would have no traffic problems, because it would be possible to walk everywhere. In the larger New Zealand cities, densities are already high within a small radius of the city centre. But because of the lack of planning, standards of light, air, sun, open space and appearance are disgracefully low. These same people could be rehoused on the same land in tall blocks with acres of park and open space and with each flat enjoying high standards in every respect. Sharawag does not advocate mixing offices and warehouses with flats. Residential areas, be they high- or low-density, should be separated from the other activities of the city. This does not rule out the terraced flats on hillsides, with which Sharawag says he agrees.—Editor.]

Gentlemen,

You have finally worn me down. Enclosed is 30/- Please regard 20/- as conscience money and the remaining 10/- as a year's subscription.

I envy you your evident faith in the belief that there has been, is or ever will be any architecture (amongst other things) in N.Z., hence the drop of oil for your altar-lamp.

Sincerely,

CHAS. F. CORNE.

---

Sir,

Please find enclosed my subscription for two years in advance together with a donation of ten shillings.

I note in your memo that you ask for suggestions for improvements.

I feel that although your magazine is doing a good job it is not to any degree helping the person who is planning to build. By this I mean the married with two children of opposite sex. The majority of your plans have been for two bedroom houses with little chance of convenient additional and are of little help to the young married couple looking for ideas.

I feel that the designers would concentrate on three bedroom houses (third bedroom to be built when required) priced at under £3,000 they would be serving a greater purpose.

For instance I have recent copies of your magazine before me and the only issue that I consider contains anything of interest to the majority and they are the people we must look to, is the Sept-Otber 1950 issue. I think this plan would be suitable and convenient for a family, more than other plans you have featured with both front and back doors opening to the Living-Dining Room.

Yours faithfully,

GORDON R. ANOTT.

Unfortunately the Architects have of necessity to concentrate only on those problems which their Clients' put before them. Only a few are able to find the time to do otherwise. However, this issue presents two houses intended for the larger family. We hope that they will prove of interest.

EDITOR.

---

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