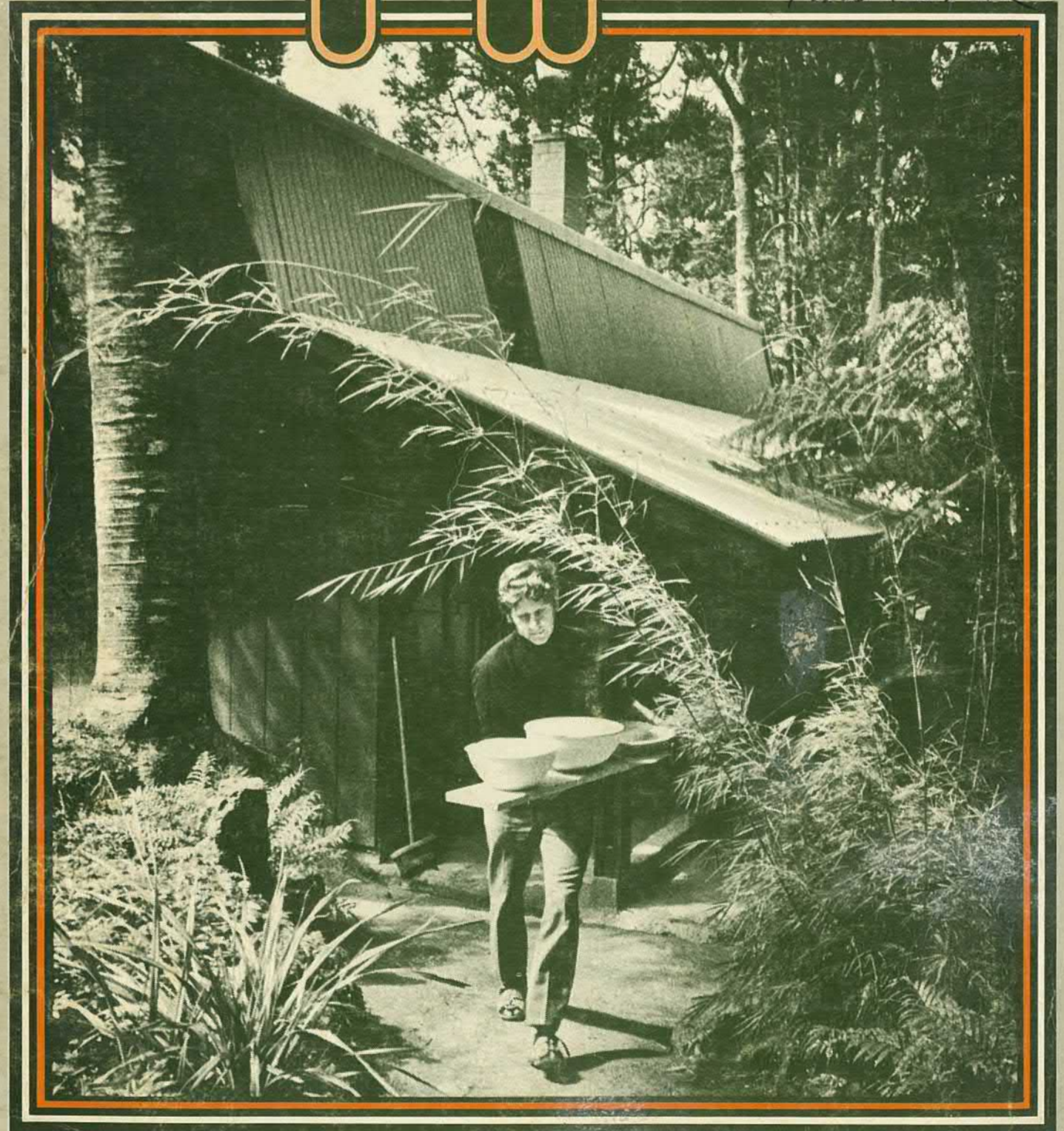


Potter

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Len Castle at work at Titirangi. Photo Steve Rumsey.

Japanese Shino glaze

LEN CASTLE

You either like Shino glaze or you don't. I do, but I am only partially hooked on the pseudo-Shino glaze that a number of us are using in New Zealand — a glaze that was developed and modified to suit average stoneware firing conditions.

The Japanese Shino glaze is essentially an opaque, milky-white, feldspathic glaze thickly applied over a not particularly plastic, coarse, siliceous white-buff coloured clay body fired between 1200-1280°C. Often there may be flashes of salmon pink, vermilion, reddish-brown, scarlet, greyed-blue in association with the white glaze. The colour appears where the glaze is thin and is derived from varying amounts of ferric oxide in the body or in the decoration. A limited range of Shino glaze effects can be seen on several pots in the Auckland Museum collection.

Japanese Shino is one of the simplest of high-fire glazes but one that requires carefully controlled firing conditions.

It is impossible to express in words more than a hint of the stunning beauty of this simple white-red glaze. It is a glaze that is rich in character, a delight to the eye and the hand. It may be thick or thin, semi-matt or silky, opaque and viscous or translucent and watery, smooth, pinholed or showing heat-healed scars of a cracked glaze surface. To some it may suggest the qualities of partially melted snow drifts on red volcanic soil, recently ploughed. To others it has the tactile qualities of white, water-tumbled quartz pebbles. It is at its finest on simple, robust pot forms, when a balance has been reached between the guiding and formative hand of the potter, materials and fire. The early Shino potters certainly understood the euphemism "finding out what the material wants to say is the best way of saying anything through the material."

White Shino pottery first appeared between 1573-1615 A.D. at Mino, 25 kilometres north of Seto. The pots found favour with the early Tea masters many of whom it is believed guided the potters in the matter of form and decoration of pots used for the Tea Ceremony. Some of the Tea masters (who occasionally travelled from Kyoto) made and decorated their own pots.

I saw and examined ancient and modern Shino pots in Japan during 1966. By questioning Takuo Kato, a noted potter from Tajimi, by handling as many pots and sherds as possible and by deduction, I have built up a series of experimental starting points that other potters may care to use. So many factors are involved that to obtain good results you must abandon any thoughts of "instant Shino".

Shino glaze

	test range parts by weight	
Potash feldspar	70-95	80 mesh and finer
Ball clay	30-5	200 mesh and finer
Sodium chloride (common salt)	3	

Feldspars contain silica, alumina and fluxes in the following approximate ratios:

Silica	Alumina	Fluxes
70	20	10

They contain a high percentage of alumina. Most stoneware glazes contain 10-15% of alumina. The high proportion of alumina stiffens the melted feldspar. A feldspar requires additional silica and flux, (which are without alumina) to turn it into a clear glaze.

One ancient recipe consists of:
local feldspar 90-95 parts by weight
rice straw ash 10-5 parts by weight

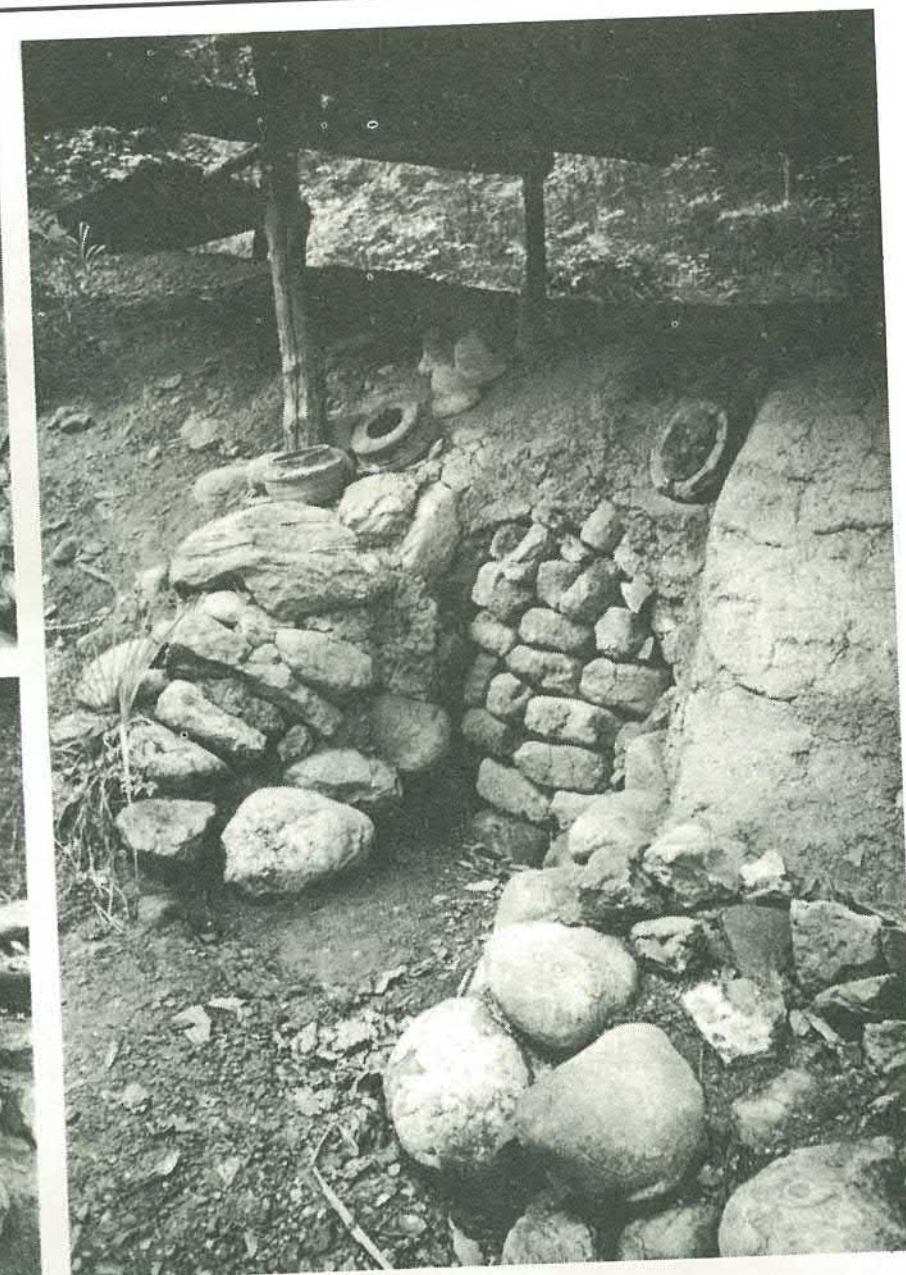
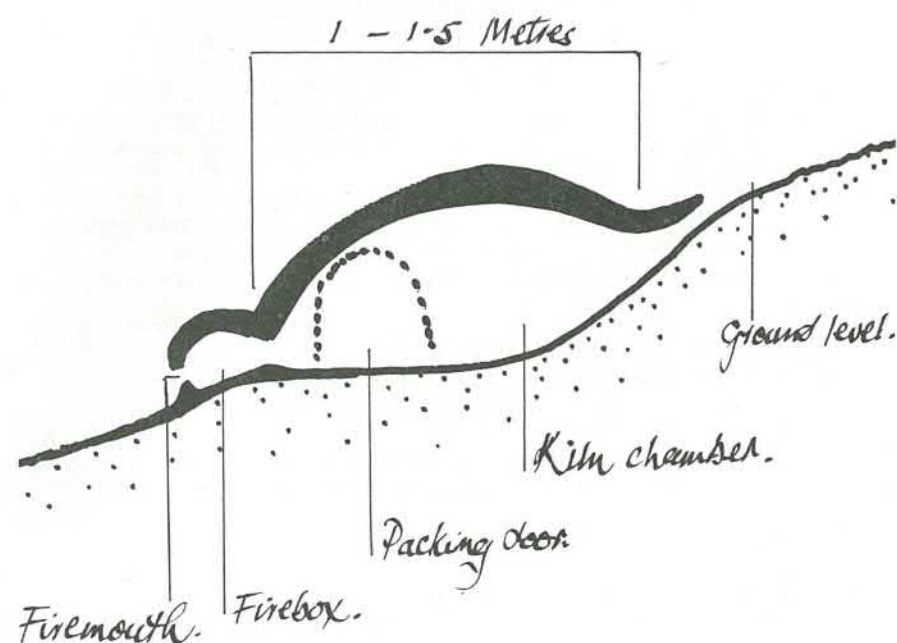
Clay body

Coarse grained siliceous, reasonably plastic with a ferric oxide content of up to 2%. Some feldspar generally needs to be added to the clay. The white, sandy pipe clays of West Auckland seem similar to those used in Japan. However the Japanese clay is kaolinitic and the Auckland clay is halloysitic.

Firing temperature

Between 1200-1280°C, depending on the glaze mix and the type of feldspars used. Some potters stop the melting of the glaze at a particular temperature. The heat work accomplished over a period of time is an important factor.

Section through a 16th Century Round Kiln.



Kiln atmosphere

Reducing from 900°C to maximum temperature.

Cooling

Must be slow or the red colour will not develop.

Kiln stacking

Pots generally need to be protected from contact with wood or oil flames.

Glaze application

Thick or thin, usually by dipping and pouring. Pin holing occurs frequently on the turned section of pots and this can be used as a decorative feature.

Left above: view of packing door and a spy hole — stoking hole of the single chambered kiln. Left below: the firemouth and part of the firebox. Right: Portion of the semi-above ground single chamber, inclined kiln used for Shino ware by Toyozō Arakawa of Tajimi. It is a damp kiln ideal for the slow firing of Shino glaze. This kiln is the only one of its type in use in Japan today and fired once every two years.

Decoration

Usually beneath the glaze on a biscuit body.

Pigment: Red ferric oxide, limonite or a highly ferruginous earth. Variations in particle size can extend the range of effects.

Slip: A natural ochrous clay can be used on the "green" pot for sgraffito decoration.

Types of Shino effects

White

Thick coating of glaze over body of low iron content fired and cooled quickly or slowly. Interesting experimental variations could include, varying the particle size of some of the ingredients to obtain partially dissolved inclusions, using silica-rich New Zealand feldspars, spicules of siliceous wood ash. However the control of the fire is of prime importance.

Grey Shino

Clay body plus ochrous slip plus thick coating of glaze, slight underfiring, fast or slow cooling. If the glaze coat is thinner and the cooling is slow a reddish colour usually appears.

White and red Shino

Variation in glaze thickness plus iron oxide decoration.

Red Shino

Either clay body in which has been mixed a highly ochrous clay, thin glaze coating and slow cooling.

Or normal clay body, thin coating of decorating pigment, medium and thin coating of glaze, plus slow cooling.

Kilns

Woodfired. Much of the early ware was fired in a single chambered, roundish kiln, half above and half below ground level. This type of kiln was most suitable for the slow gradual increase in temperature necessary to obtain the finest glaze effects.

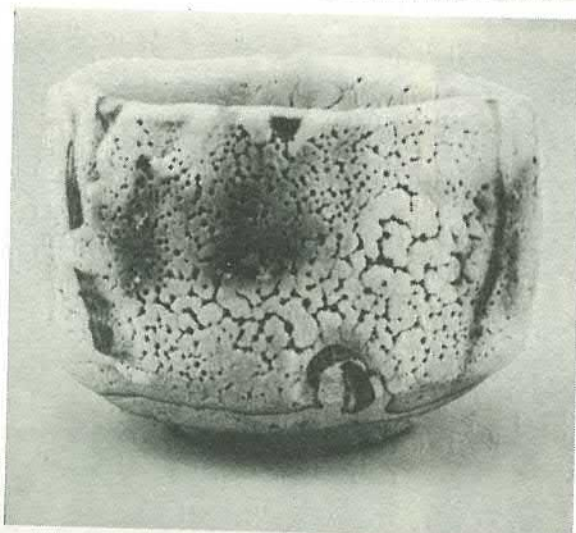
The thermal efficiency of these kilns was low, from 20-40 hours was needed to reach the maximum temperature. Sometimes the temperature increase was stopped before the feldspathic glaze had melted completely.

Pictorial references for colour illustrations:

2,000 years of Oriental Ceramics,
Koyama and Figges,
published by Thames and Hudson.
Japanese Ceramics,
Roy Miller,
published by Toto Shuppan Co.



Above,
Base of the
tea bowl "sunrise"



Left,
Tea bowl "sunrise"
Shino ware. Ht 100 mm.
Toyozō Arakawa 1970



Below: incense box
also Toyozō Arakawa.

18th National

Reviewed by Roy Dunningham

The question of aim and purpose arose more clearly at this exhibition, held in Hastings in October, than at any other display of New Zealand pottery that I have seen. Many potters are no longer content to adhere to a doctrine of functionalism and are investigating the expressive and aesthetic side of their craft for its own sake unencumbered by functional limitations.

However, freedom in art, as in life, is not easily won and the removal of external restraints has to be paid for by additional discipline and strength of purpose from within.

The most successful work came from those whose creative ideas appeared to have grown from a spontaneous fusion of materials and process and the potters own personal observations of his surroundings. One is reminded of Picasso's dictum — "I do not search I find!"

Len Castle's Hanging Forms showed a finely balanced harmony between ideas, material and function as did work by Nola Barron and Sally Connolly. David Brokenshire's sculptures Power 1 2 and 3 sat well in the strong Hastings sunlight in the open sculpture court. I found it hard to think of them individually as they seemed to belong as a group. Brian Gartside appeared more in control of his relief work which used clay more naturally than his ill-related Cucurbita Forms.

Other works of interest in this area included two rather threatening Winged Forms by Ian Firth. But to me the most genuinely exciting piece in this field was Barry Brickell's Triple Steam Plate (steam series). One could quibble at a slight unsteadiness on its base but this was trifling considering the total boldness of concept and its execution. The witty ambiguity of reference to metallic surface without compromising the qualities of clay was unique in the show.

Other exhibitors met with mixed success. Muriel Moody's Couple was beautifully made but, considered as sculpture failed, because of the clichéd and over sentimentalised style. Most other sculptural work offered little more than novelty shop value.

Some challenging work shown was a series, Sea Plates by Helen Mason. The violent attack upon the basic form and the frozen restlessness of the glaze were disquieting.

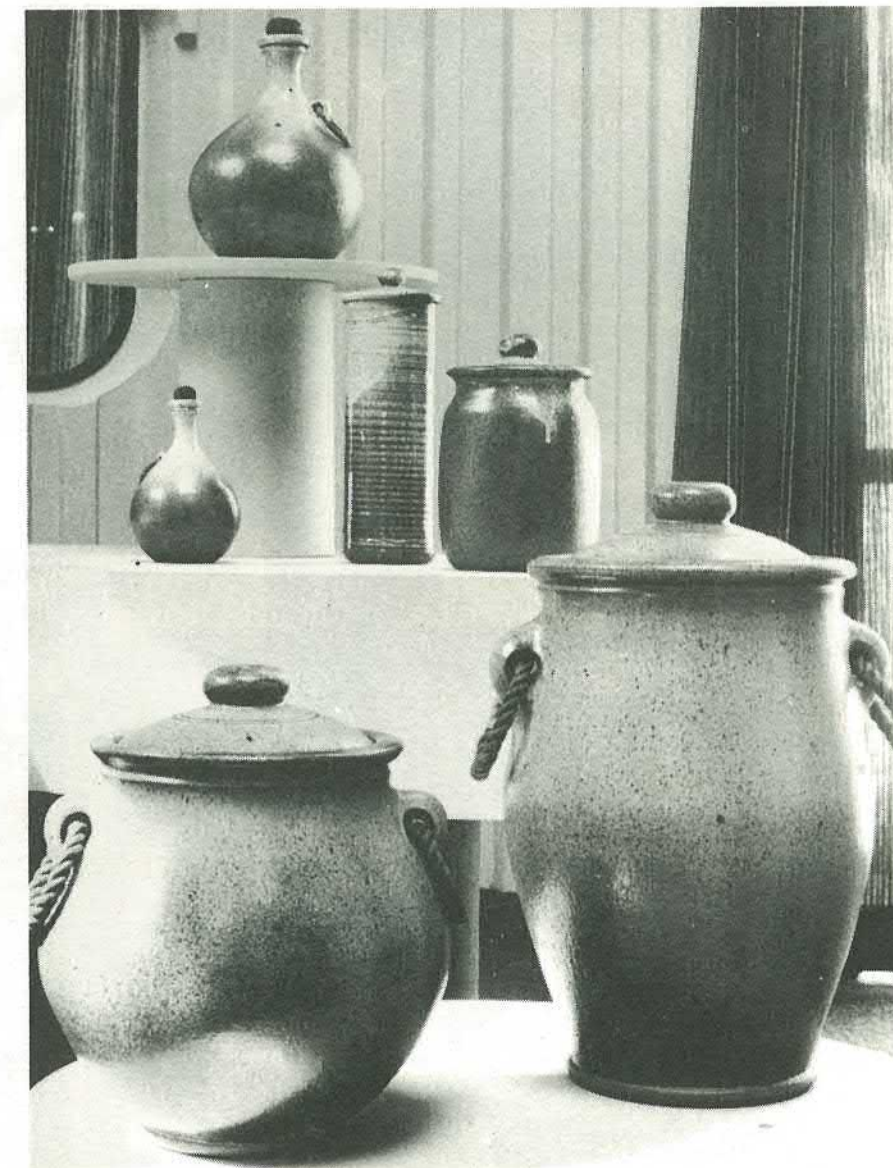
Group of pots, Lawrence Ewing

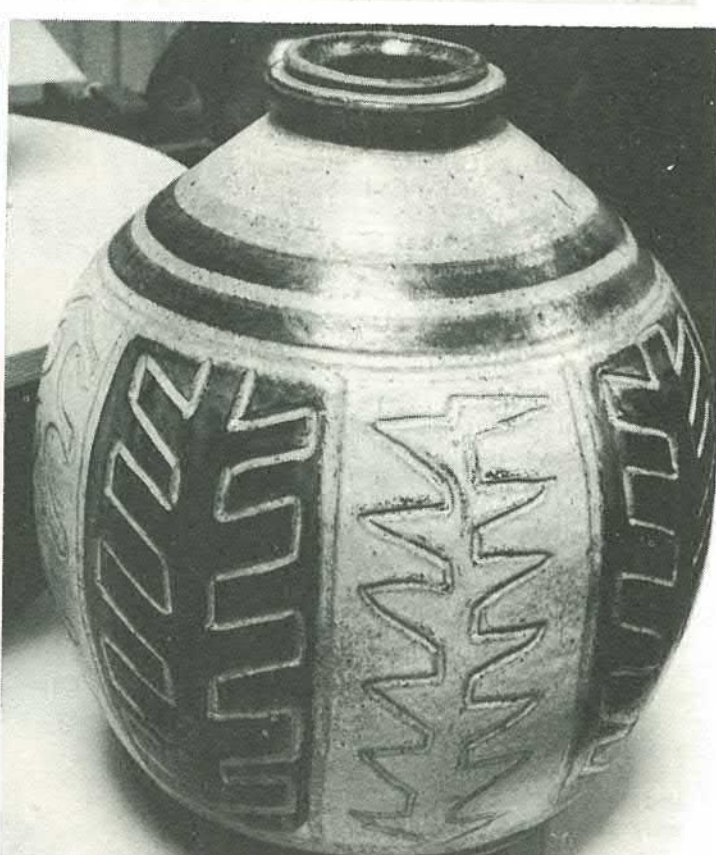
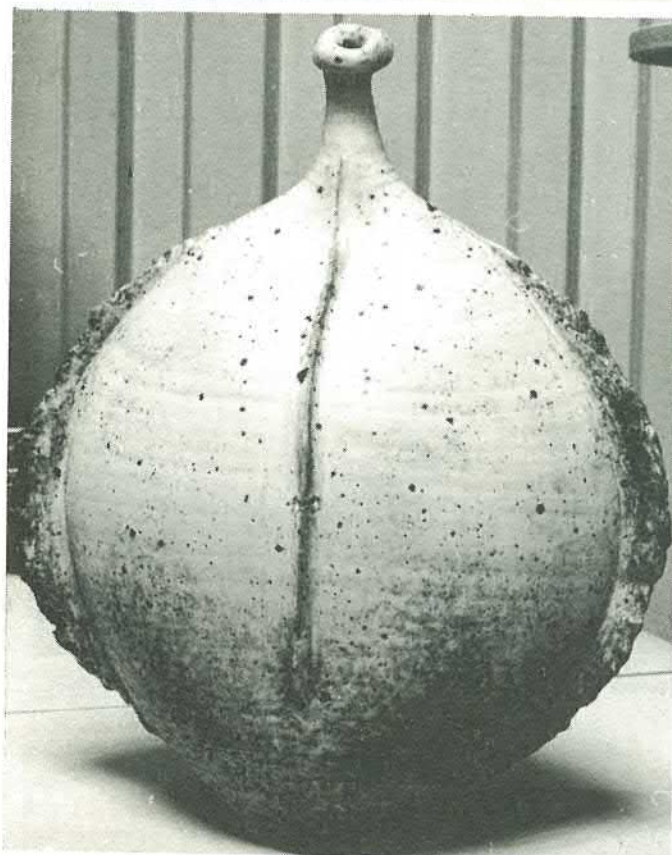
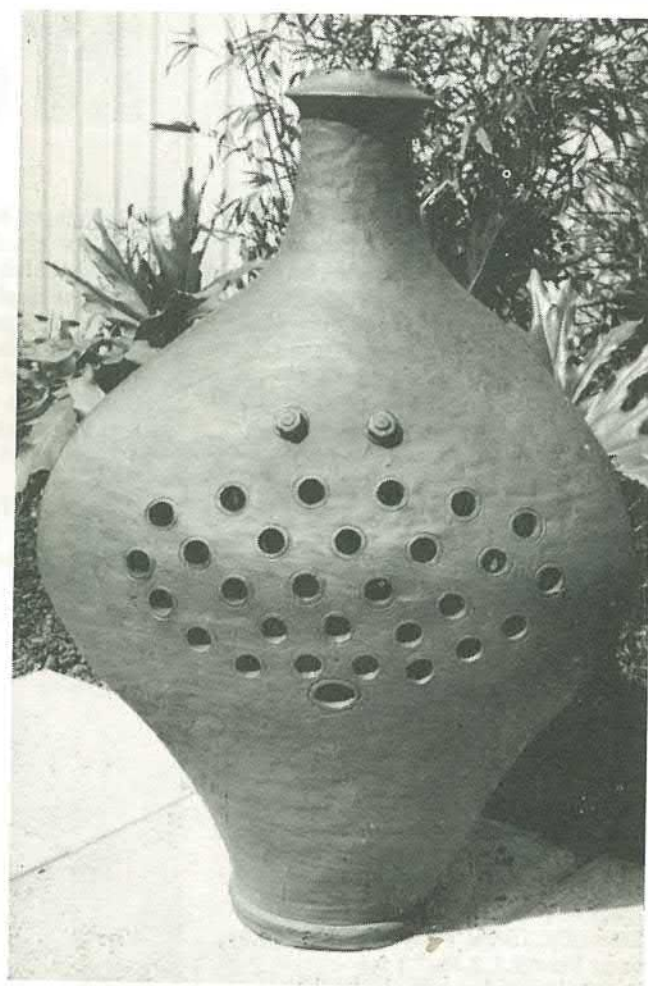
The range of household ware was thoroughly professional and the speed with which it sold was as much tribute to the quality of the work as to the reasonable prices asked. It was good to see pots being bought for public permanent collections. Foreign Affairs Department was the chief buyer and among their purchases was a sumptuous bowl by Nicholas Brandon.

John Campbell's coffee set was calm and controlled in style. Lawrence Ewing also showed that the best solution to a problem is often the simplest one. His work exemplified strength through restraint as did Bruce Martin's

admirable slabware. Mirek Smisek's work was strong and forthright but the heavy salt glaze on the Large Crock seemed too much of a good thing.

Surface decoration was a weakness in many exhibitors who appeared to lose confidence in their own judgment. The more successful surface embellishment was often relief effects where the potter is forced to work more directly in harmony with the surface than when using the painting technique. The greater freedom involved in painting demands high standards of self discipline and clear thinking about intention. Some designs did not relate well to the shape, while others





continued to borrow heavily from Japan.

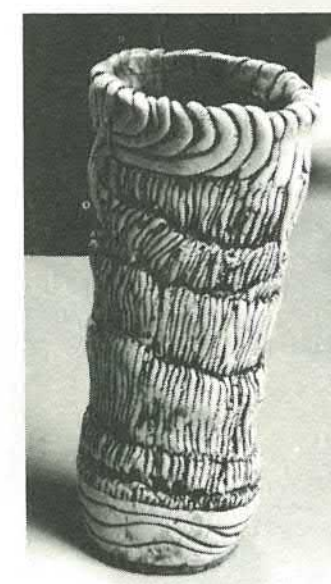
Anneke Borren and Brian Gartside, showed a bold attack although the former's Big Cube Sculpture was partly spoiled for me by the design theme. Bird motifs have become a cliché in craft design in recent years.

It's significant that two of the most successful decorators have a background in painting. Potter Juliet Peter is also a painter and graphic illustrator. The other at this exhibition of course was guest potter Alan Caiger-Smith whose lustre and majolica ware was quite stunning in the richness and conviction of colour application.

I recall a film I once saw on Bernard Leach where I was particularly impressed by the quality of his drawing. I don't refer to drawing in the narrow sense, but as a means of exploring the possibilities of line and enlarging one's basic vocabulary of shapes and forms from the surrounding world.

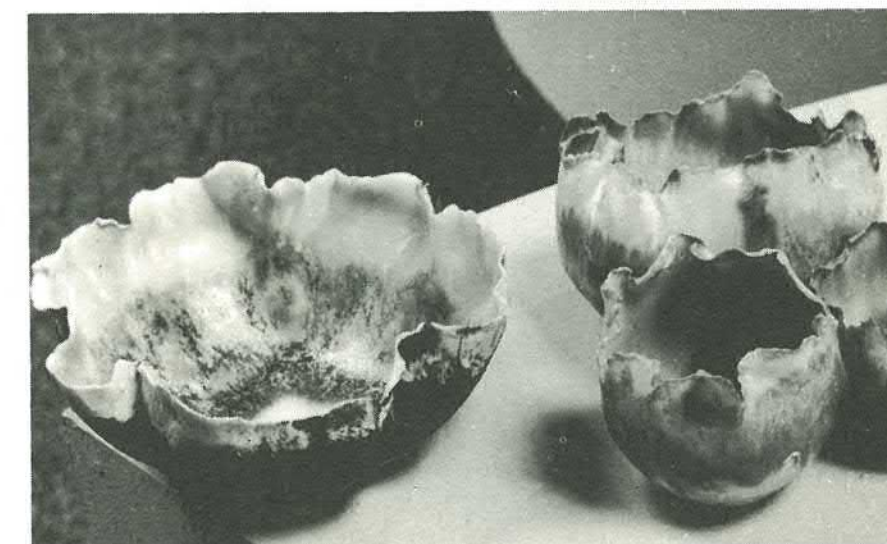
Mention should be made of the display of the exhibits which is so critical to any exhibition. This display was done with intelligence and sensitivity and took full advantage of the sympathetically designed Hastings Cultural Centre building. The sequence was never static or repetitive and the viewer could move comfortably through the whole showing.

Roy Dunningham is
art master at
Hastings Boy's High School



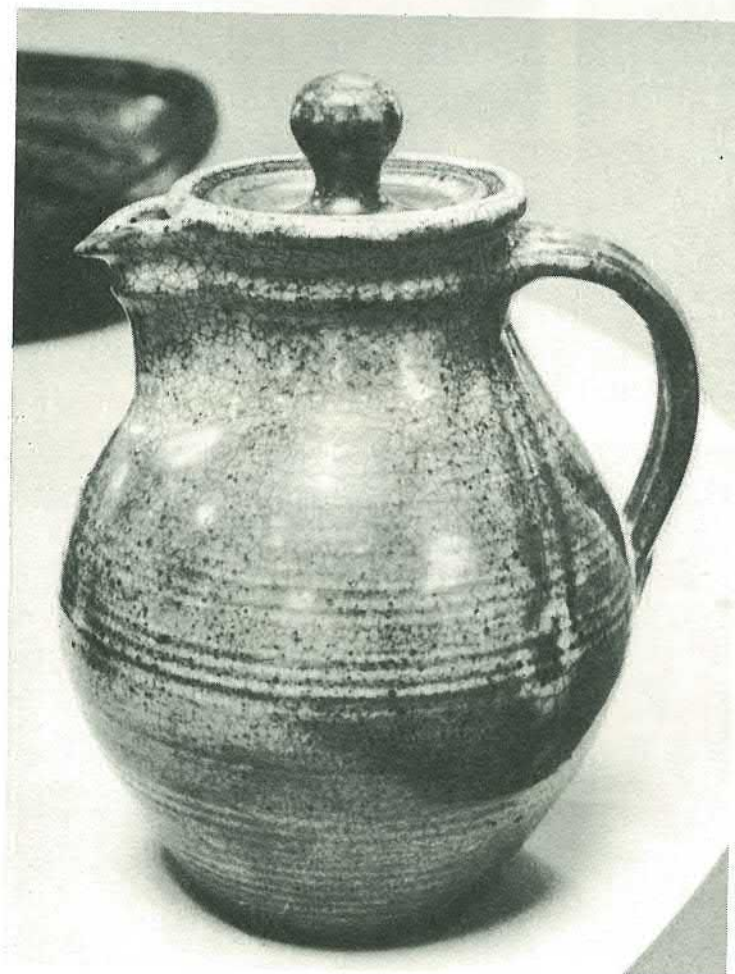
Opposite: from top left to right, Mirek Smisek, Barry Brickell, Ian Firth, Juliet Peter.

This page: Beverley Luxton, Rosemarie Brittain, John Campbell, Margaret Milne.
photos: Stan Jenkins





Teapot, and coffeepot with Shino glaze, Lynn Spencer



Dawn Percy

In every way I found the 18th National at Hastings a more rewarding show than the 17th National at Auckland. The Hastings Cultural Centre is spacious, airy and well-lit with no pillars or posts to hamper the layout. The exhibition stands adapted slightly from last year, worked admirably and Bruce Martin and his team may well feel proud of time and efforts in displaying the pots to their full advantage.

The grouping of work on various levels enabled one to see the work of individual potters and also to compare it with work of a similar type. More people submitted pots as a consistent group, not trying to show a little of everything but to give a rounded picture of a particular interest or development. The porcelain, for instance of Graeme Storm, Margaret Milne, Rosemarie Brittain, Irene Spiller, Una Sharpley, Beverley Luxton and Doris Dutch was grouped and organised so that one could see, enjoy and compare the range and variety of development within this relatively new and demanding field.

I was lucky enough to spend some time with guest exhibitor Alan Caiger-Smith looking around the exhibition on the morning of the opening. He was most impressed with the range of work, its over-all quality, the tremendous differences in styles and the general vitality of the whole show. His expectations had been of rugged, sturdy, earthy crocks and bowls, and the achievements of so many people in so many diverse fields impressed him. He was delighted with the quality of the porcelain, the freedom of decoration on so many pots and the comprehensive range of work shown.

The standard over-all was remarkably consistent. The selectors did an admirable job of whittling down the 557 pieces submitted, to the 343 finally displayed. They reported finding few really incompetent pots and they firmly rejected these along with the trite and the commonplace. They eliminated entirely the work of five or six potters, and accepted a single piece from several others which may prove very salutary.

For an exhibitions committee the whole business of selection imposes many more problems — the greater number of pots to allow for selecting the best, the increased storage needed, the provision of adequate space for the selectors having to cope with rejected pots and so on. But the quality of this year's show seems to justify the extra chores involved.

New members for 1975 (7 of the 38 applicants were accepted), proved worthy of their admittance to the New Zealand Society. Barry Ball and Stephen Carter's domestic ware, Beverley Luxton's porcelain and Ray Roger's large stoneware bowls and platters (though a little underfired) were all of consistently high standard and Lynn Spencer's work was outstanding. For her Shino pots to be able to share a table with Len Castle's work and not to be uncomfortably outclassed was an achievement. Her teapots and especially her coffee pot were beautifully proportioned and the Shino was soft and lustrous.

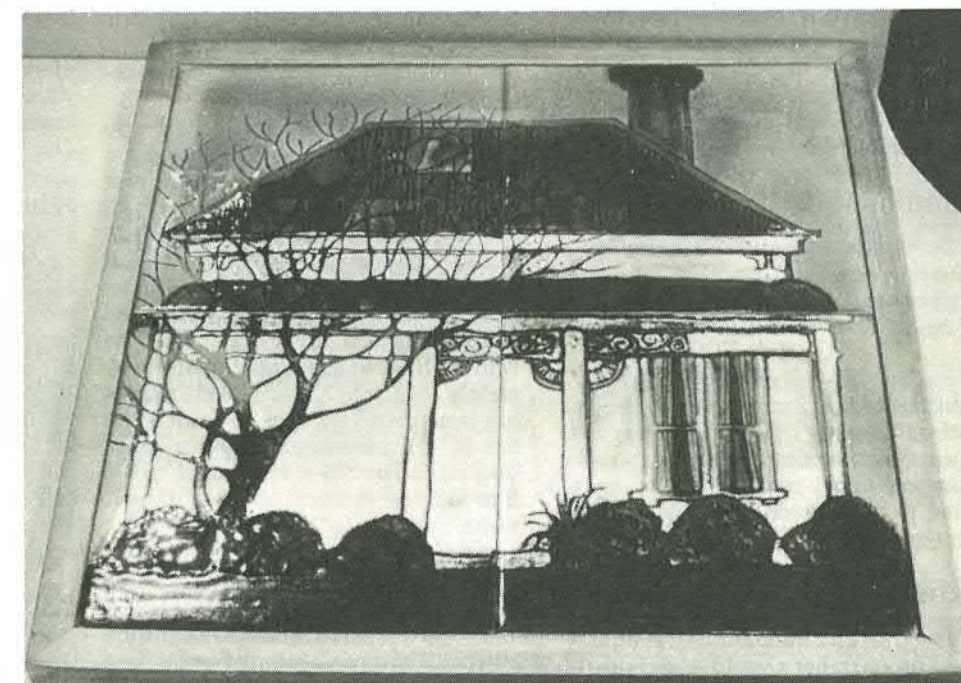
There were many fine pots this year. For me some of the highlights were Len Castle's superb hanging forms, the vigorous jars and bottles of Lawrence Ewing, Mirek Smisek and Nick Bran-

don. Brian Gartside's two large platters with their beautifully handled glazes, Gennie de Lange's delightful "Spreydon House" tiles, Barry Brickell's immense terracotta pot, Estelle Martin's very consistent domestic ware and almost all of the porcelain.

On balance it was a very worthwhile National. Not all of the work was outstanding but the awful horrors that marred last year's show and to an extent this year's concurrent Auckland Studio Potters' Exhibition — the so called "sculptures", the plaques and gimmicky pieces as well as the merely incompetent, the trite and the dull — were either not submitted or were rejected by the selection panel. Hooray for selection panels and full marks to Nola Barron, Stan Jenkins and David Millar.

It will be interesting to see the long term effect of guest exhibitor Alan Caiger-Smith. He works in the majolica tradition way outside the main stream of British, let alone New Zealand pottery with elegant refined goblets, bowls and teapots beautifully glazed and decorated. His brushwork is free but completely controlled and his use of glazes and lustres remarkable. The New Zealand Society is to be commended for persuading such diverse potters as Australian Col Levy and Englishman Caiger-Smith to share their work, their ideas and their inspiration with New Zealand potters and public.

Dawn Percy until recently pottery reviewer for the New Zealand Herald is Art Education Head of North Shore Teachers' College Auckland.

Gennie de Lange
photos: Stan Jenkins

To the potters of New Zealand

Please will you pass on my profound thanks to the New Zealand Society of Potters for inviting me to be the guest exhibitor at Hastings for the 1975 exhibition. This has been a valued privilege and a heart warming experience, a memory I shall treasure.

It was wonderful to meet so many fellow potters at that tremendous party at Napier, and at the opening of the exhibition the following night, as well as the people I met at the six schools in both the Islands. And I send my thanks to all those many, many people who helped in various ways to make these occasions so smooth-running and enjoyable.

Wherever I went I was amongst friends who made my leisure times glow with pleasure and interest. I tried to give of my best. It was not difficult in such favourable circumstances, and I hope it matches in some degree the reception I was given.

The openness, the mutual respect, and the regard for work of good quality regardless of differences of approach which characterise the New Zealand pottery scene, are immensely valuable. We have something of it in Britain also but it does not come about everywhere. It grows out of people's inner values, their recognition of equivalent motivations in others, their estimation of the craft itself beyond personal success or gain, and it develops out of a multitude of small actions and relationships, most of which will never be known.

To participate in this creative circle on the other side of the world has been a wonderful experience.

Alan Caiger-Smith, The Pottery, Aldermaston, Berkshire, England.

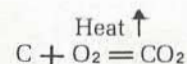
Design and management of oil fired kilns

IAN FIRTH

Little has been written about the actual technical details and procedures of firing oil burning kilns. I know that every kiln has an individual 'personality' and that even kilns built identically brick for brick will perform differently. Having built many kilns from makeshift heaps of bricks to sophisticated trolley-loaded jobs, and after countless firings, one finds that certain principles and practices hold good for all. With this in mind I offer this information.

Combustion

Combustion involves the reaction of carbonaceous fuel (in this case oil) with oxygen with the attendant release of heat



thus the carbon is converted to the gas carbon dioxide. To fire pottery we need a box to contain this heat made from refractory materials, and insulated to counteract heat loss to some degree.

Kiln design

For greatest efficiency and economy the kiln chamber should approximate a cube as nearly as possible. Within this cube there must be adequate space for combustion to take place and the flames develop. The kiln design must allow a space between the walls and the shelves in the combustion area of at least 150 mm (6 inches) and vertically if possible 760 mm (30 inches). If you are building a kiln with a bisque chamber as well, adequate flues from glost to bisque, and/or chamber to stack must be provided, together with a chimney of sufficient dimensions to obtain the desired rate of flow of gases. Undersizing of these critical areas results in 'choking' of the kiln, with a consequent reluctance to gain temperature, especially in the latter part of the firing.

Oversizing of these areas will make

the kiln difficult to heat initially, because of excessive air cooling, and cause rapid heat rises at the upper end of the scale. Attempts to slow down this rapid heat rise would result in oxidation.

It is better to err on the generous side as one can use the damper, also it is easier to partially brick-in over generous flues than it is to bash out brickwork to enlarge them.

To give an indication of chamber to flue to stack ratios. A kiln designed around two standard 460 x 300 mm (18" x 12") shelves side by side with 75 mm (3") space between and 75-100 mm (3-4") spacing from end walls, and 150-180 mm (6-7") where flames rise, i.e. 3 bricks by 4½ bricks in internal size by thirteen rows high, plus the vault, will give a chamber of approximately .623 m³ (22 cubic feet) requiring two spaced ports of 150 mm x 125 mm (6" x 5") leading to identical sized bisque, and/or 225 x 150 mm (9" x 6") flue leading to stack of same dimensions.

A four shelf layout of approximately 1.415 m³ (50 cu. ft) will require three spaced ports of 225 mm x 125 mm (9" x 5") leading to an identical sized bisque and/or a 225 mm x 225 mm flue leading to a stack of the same dimensions.

A kiln of approximately 2.832 cu. m. (100 cu ft) requiring a chimney of 345 x 345 mm (13½" x 13½") with three bisque chamber flues of 225 mm x 225 mm (9" x 9") chimney heights should be approximately 2.133 m (7 ft) for two shelf kiln, 4.267 m (14 ft) for four shelf kiln, 6.100 m (20 ft) for 2.8 cu. m. (100 cubic feet) kiln.

These proportions are designed in all cases for forced air kilns.

Natural draught is out from an air pollution point of view anyhow.

Having now decided on the main proportion of the kiln design we turn to materials. Adequate for our purposes are firebricks with a 30% alumina content for the lining with an over layer of perforated common

bricks. A good mix for insulating over the arch of a kiln where heat loss is greatest is the following:

- 1 part cement fondue
- 2 parts ball clay
- 8 parts vermiculite

Mix with enough water to make a workable mix. Reinforce with chicken netting 25 mm (1 inch) from bottom face and 25 mm (1 inch) from top face. Trowel surface when partly set. This mix resists crumbling and has excellent insulating qualities.

Heat distribution

Heat distribution within the kiln can be greatly assisted by remembering the following:

Allow adequate spaces for gases to travel 75 mm (3") between shelves and end walls, 150 mm from floor to first shelf, 150 mm (6") from shelves to wall where flames rise.

Pack larger pots in both bottom and top of kiln, denser packing in the middle.

Obtain a reflective white coating within the chamber by washing the bricks with a very thin watery coating of 15 parts silica to one part kaolin for the first half dozen firings or so. If you try to put it on thickly, in one or two coats, it will flake off.

Preparation of pots for kiln

The use of a spirit-based cold wax makes glazing more pleasant.

A damp sponge for 'feathering' the glaze at the foot will save many a heartbreak.

Any really doubtful glazes or tests should be packed on a thin 'pancake' made from a plastic mix of 50/50 fire-clay and silica sand, quickly pinched just prior to placing, the same mix being ideal as a wad between shelf and shelf support.

A pancake should be used under very large pieces allowing them to shrink without splitting during firing.

Favourite matt glazes which spoil by

going shiny and transparent by slight overfiring or flashing can usually be remedied by the addition to the glaze of approximately 4% alumina hydrate.

A lot of time in loading a kiln can be saved by remembering to make the height of your pots to suit your kiln props. It is also an advantage to have asbestos or hardboard bats sized just a fraction larger than your kiln shelves to assist in throwing shelf lots. Newspaper placed on these boards will allow the wet pots to shrink, and they will be of convenient size for carrying to the drying racks.

Shelf support systems and loading

The most suitable shelves for glost firing are silicon carbide.

The standard 460 x 305 x 16 mm (18" x 12" x 5/8") being a useful size which resists cracking.

The closer to square a shelf is the more prone it is to cracking. (Uneven heating causes most cracks in shelves and pots).

Three supports per shelf is the desired number (as per diagram).

The most convenient shelf support system I have found is one that utilises whole bricks, half bricks and one third bricks. Each support being capped by a piece of silicon carbide measuring 95 x 114 x 16 mm (3¾" x 4½" x 5/8") turned lengthwise to support a shelf on either side, and widthwise to support a shelf one side only. This system leaves the whole shelf for pots, free of obstructions and has the advantage of making compulsory the correct spacing of shelves (75 mm (3") being the thickness of a brick) thus ensuring the free passage of flames throughout the setting, facilitating even temperatures and consistent reduction.

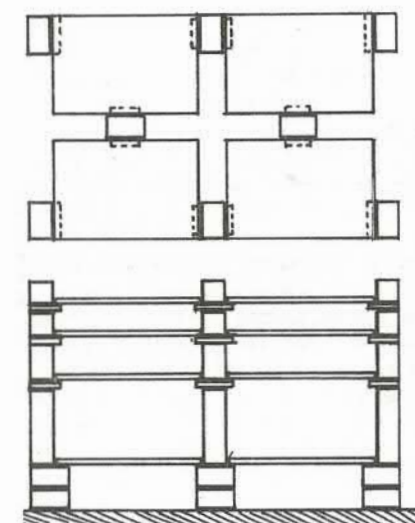
The same system can be used in the bisque chamber substituting sillimanite for silicon carbide, as in the diagram.

With this method of supporting the shelves each tier of shelves interlocks with the others, unifying and making the whole setting extremely stable.

A less expensive alternative (but not quite as stable) is to use very tapered end arch and side arch firebricks, narrow face down, the wider upper face providing the support for the shelves. Or one could make "T" shaped supports of various sizes using a refractory castable.

Shelf supports should also be coated with the same reflective white coating mentioned earlier.

A convenient but more expensive alternative is to use a commercial aluminium paint such as "Silva-shen".



Plan and elevation of shelf supports

Firing equipment and accessories

Pyrometer

A pyrometer, though initially fairly expensive, will always pay for itself by reducing kiln losses through under and over firing, apart from savings in fuel consumption, as one can always tell if one's efforts are being rewarded with a gain in temperature.

The place for the probe is through the back wall (opposite the wicket face) near the top, where it is least likely to be damaged.

This is also the one place where it would be almost impossible to see any cones.

Burners

The choice is fairly wide. From blower-assisted louvres, horizontal and vertical jets through to highly complex and expensive commercial burners. Whatever type is chosen the kiln should be brought up to a temperature of about 800°C by means of the vapourising type of 'pot' burner, as this is the only type of burner that can heat a kiln from cold without a trace of smoke.

They also have the added advantage of being usable with the damper almost closed, preventing excess draft and consequent uneven heating in the critical early stages.

Blowers

The air supply should come from a motor-driven fan of a size related to the size of the kiln and the number of burners, delivering an air pressure of up to 90 mm water gauge for the pot burners and jet burners and up to 200 mm

water gauge for the various horizontal firing types.

Vacuum cleaners can be used as blowers but this is not recommended as vacuum cleaners are not designed to run for the long periods required to fire a kiln, and because a large volume of air at a relatively low pressure is required. Vacuum cleaners deliver a small volume of air at a relatively high pressure. Consequently a number of cleaners are required to fire larger kilns and the expense in initial outlay and maintenance is too high.

Water Gauge

This is a very inexpensive piece of equipment and all air systems should include one. There are so many variables in firing kilns that the more you have under your control the better your chances of obtaining consistent results. A simple water gauge can be built with a 150 mm (6") length of 10 mm (3/8") diameter copper pipe bent to a right angle. This is fixed in the centre of the main air pipe with 'Araldite', the open end facing towards the air flow.

A 1 m length of clear plastic tubing is slipped over the outer end and bent into an "S" shape and fixed on a backing board. The "U" shaped piece is then filled with water with a touch of dye in it for convenience in reading. The gauge is read by measuring the difference in the water levels in this "U" shape.

If the air pressure pushes the water down 10 mm on one side it will have raised 10 mm on the other. The difference between the levels and thereby the gauge reading is 20 mm water gauge air pressure.

With all blowers, the more air that is shifted the greater the load on the motor, therefore it is better to use a butterfly valve to control air pressure than to allow air to "blow off".

Where possible it is best to mount the fan directly on to the shaft of the motor. If the speed is not great enough for your requirements use a 'cog type' of Vee belt to transmit maximum power.

Firing

The first requirement for good firing is to get yourself into the right physical pitch to do battle with the beast!

Draw on all your resources, plus one or two tricks you didn't know you had.

Assuming the kiln is loaded and the wicket bricked up but not clammed, push the damper in till it is only about 50 mm (2") open. Prime the pot burners with methylated spirits, light and position them in the kiln. Connect to air system (still turned off) adjust oil to

fast drip on each pot burner. Turn on fan but keep butterfly valve closed till a steady flame is established (2 — 3 mins). Open air valve fractionally till air gauge reads 10 mm. After about 20 minutes, when pots will be burning steadily air may be increased to 20 mm.

With pot burners always remember to increase oil first, then air, this way you will avoid blowing them out. Black smoke denotes too much oil, white smoke denotes too much air.

Gradually increase oil/air ratio at hourly intervals. Air 10 mm per hour, oil to balance, maintaining a steady heat rise of 100°C — 130°C per hour. At 800°C air pressure should be 80 mm. I have had no problems with cracking of pots or shelves (even pots up to 1.000 m (3' — 3'') diameter) using pot burners in the manner described, firing the glost chamber to 800°C in 6 hours. This schedule has been followed without incident over the past 400 firings.

Once 800°C has been reached the pot burners are stopped and withdrawn. The damper opened and the new burners, of whatever type, are installed and started. They will ignite and burn without smoke in the already evenly hot chamber. Once the burners are settled and a temperature of 850°C is reached the flame may be lengthened and damper adjusted to give a positive pressure within the chamber. This can be judged by observing a slight lick of flame from spyholes when bungs are removed. The chimney should be just short of smoke, the atmosphere will be reducing with maximum heat input. These are the conditions to aim for if iron spotting through glaze and reduced colours in clay and glaze are desired. Heavy reduction achieves nothing, but pollutes the air with smoke and smut, wastes fuel and gives less heat. With oil prices continually rising maximum efficiency in heating our

kilns is essential.

If oxidising conditions are required air pressure is maintained and fuel is cut back to shorten flame and the damper is opened.

Most potters prefer the softer effects of the reduced colour of the clay showing through the glaze, and subsequently reduction must start before the glaze surface seals. This happens quite early with some stoneware glazes. I have several glazes that are completely sealed over by 1100°C even though the glaze is not matured until 1300°C.

Temperature distribution and reduction throughout the chamber is best achieved by concentrating on the fall of the cones in the bottom of the chamber. By using a long flame the top of the chamber will be found to be slightly cooler, but it is just a matter of shortening the flames till they peak in arch to bring the kiln to temperature in the top. The middle will take care of itself. To assist in peaking the flames in the crown I find it essential to have a spy in either side of the wicket at the top where you can observe that the tips of the flame are just reaching the top. The bottom temperature will not rise during this operation.

Once the fall of the cones has been achieved throughout the kiln a soaking period of between ½ and 1 hour at slightly lower than maximum temperature should be aimed for. This is where a pyrometer comes into its own. A reduction in air, oil settings and use of damper will achieve this soaking period.

The type of flame best suited to firing pots in an open setting is a slow wallowing one, travelling at about 3 ft per second. This avoids the flashing/scorching uneven heating of pots which accompanies high air pressure/fast flame "hell fire" methods of firing.

The kiln may be 'blown down' after the soaking period to a temperature of

900°C-800°C (no less) if cristobalite formation in the body is a problem. It will make little difference to the eventual time that the pots may be drawn.

This blowing down is achieved by turning off the fuel while keeping up the air blast and the damper open and usually takes about 45 minutes.

Some thoughts in passing

The wickets should be clammed with a softish mix of 50/50 fireclay and silica sand when temperature has reached 600°C.

Vertical jet burners operate best at about 90 mm air pressure or less. Higher air pressures are of no real benefit.

Pot burners can be tilted slightly in latter stages to increase oil flow.

A 'mouse hole' directly above each burner is useful in determining the state of the flame.

Dampers on the side flues between glost and bisque help greatly in heat distribution in both chambers.

Bisque chamber should be identical in size to glost, if large pots are ever considered.

In spite of what overseas experts may say, double chambered kilns rarely suffer from over-fired bisque. In fact it is sometimes necessary to install a burner for a short time in this chamber to bring it to temperature (900°C). But fuel savings are significant.

Allow space for cone patts when loading the glost chamber to get accurate reading of temperature within the setting. Don't be tempted to encroach setting into combustion spaces.

A firing cycle of about 12 hours to cone 10 plus a 1 hour soak is 'ideal'.

A removable brick at the base of the chimney to allow air to enter (called an air bleed) is useful when reducing as it cuts back draught, while preserving maximum volume in the stack for in-

creased gases during this period.

Keep the damper closed after firing till the kiln is cool enough to unload.

Have respect for the dangers involved in firing with oil.

Have leak-proof metal fuel lines away from the heat source.

A solenoid shut-off valve in the event of a power failure. Have handy a bag of clean dry sand and an adequate sized CO₂ fire extinguisher.

Use green gas welding goggles for viewing cones at high temperatures. The intense light can permanently damage eyes.

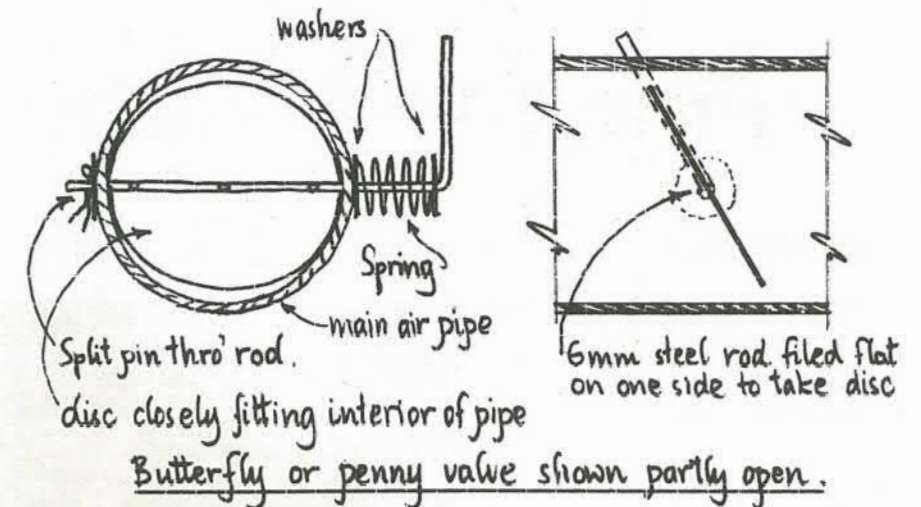
Air feed pipes should have smooth interior surfaces.

Abrupt angles should be avoided as these cause turbulence and drag, with subsequent loss of efficiency.

Unloading the kiln

Providing all has gone well before, the pots may be safely unloaded when the temperature has dropped to 200°C.

Despite all precautions the odd pot will have struck to the shelf. This is best removed if it is not too badly stuck by inserting a thin blade, such as an old table knife, between pot and shelf to lever off. The remaining glaze should be removed from shelf by chipping with a sharp cold chisel, first re-



membering to place the shelf flat on a firm surface, such as a bed of sand or a thick firm rubber mat. The surface may be smoothed with a soft grinding wheel running at about 800 — 900 revs. Any protruding glaze can be removed from pots with this same grinding wheel, ideally simultaneously being wetted with water. The bulk of the pots should come cleanly from the shelf. The bottoms can be conveniently smoothed by buffing on a wire brush mounted on the spindle opposite the grinding wheel. Remember to

wear safety glasses during these operations.

Providing body and glazes have been formulated correctly, and good firing procedures have been observed, no separating agent between galleries and lids will be required.

Stubborn lids are best removed by holding the whole pot under water in a tub grasping the lid by the knob and rapping sharply on strongest part of pot with the padded handle of a hammer. The water better distributes the shock of impact.

The continuing saga of how not to fire a kiln

Having used an electric kiln for 8 years with a few attempts to fire oil kilns, to my neighbour's disgust and without much success anyway, my wife and I visited Barry Brickell at Driving Creek during his open month in 1975.

Seeing the ease with which his oil and wood fired kilns performed and having read somewhere that a larger kiln is easier to fire than a small one I decided to build a wood fired kiln of 27 cubic feet. After visiting disused dairy factories and the local gas works I had enough bricks to start.

My first attempt resulted in melting the fire bars — ex factory boiler, in the firemouth, but getting no heat in the kiln. The second and third firing were the same. I rebuilt with additional bricks a bigger, 35 cubic foot, oil fired dripfeed down draught kiln in a different location because I blamed the downdraught caused by nearby trees for the previous failure. I have found out since that the chimney was too small.

The kiln worked well up to 1100° when the flame came back from the firemouths and burnt the plastic fuel lines allowing fuel to flood. Result:

more fire outside than inside. End of phase one.

A reply from a letter to Roy Cowan solved the problems of feeding. However a shift to new premises in the country meant rebuilding. This time with more bricks I made a 60 cubic foot kiln incorporating the suggested remedies — louvres and two firemouths. A bisque firing was most satisfactory. The glaze firing however was a different story. A hundred and two gallons of fuel were consumed over 30 hours and a kilnful of soot was the end result. I blamed again the surrounding trees for the failure of downdraught, but I made some adjustments to the chimney and started again.

This time all went well until the bag wall collapsed and closed off the firemouths. Seven pots directly behind the firemouths were perfectly glazed and fuel consumption this time had reduced to 45 gallons over 18 hours burning.

More modifications were necessary. I shifted the chimney to the side, introduced two more firemouths where the chimney had been and started again. Strong west winds with better

conditions following were promised from the weather office.

The kiln drew well right from the start but this time I was too careful and it took 8 hours to get flame into the kiln.

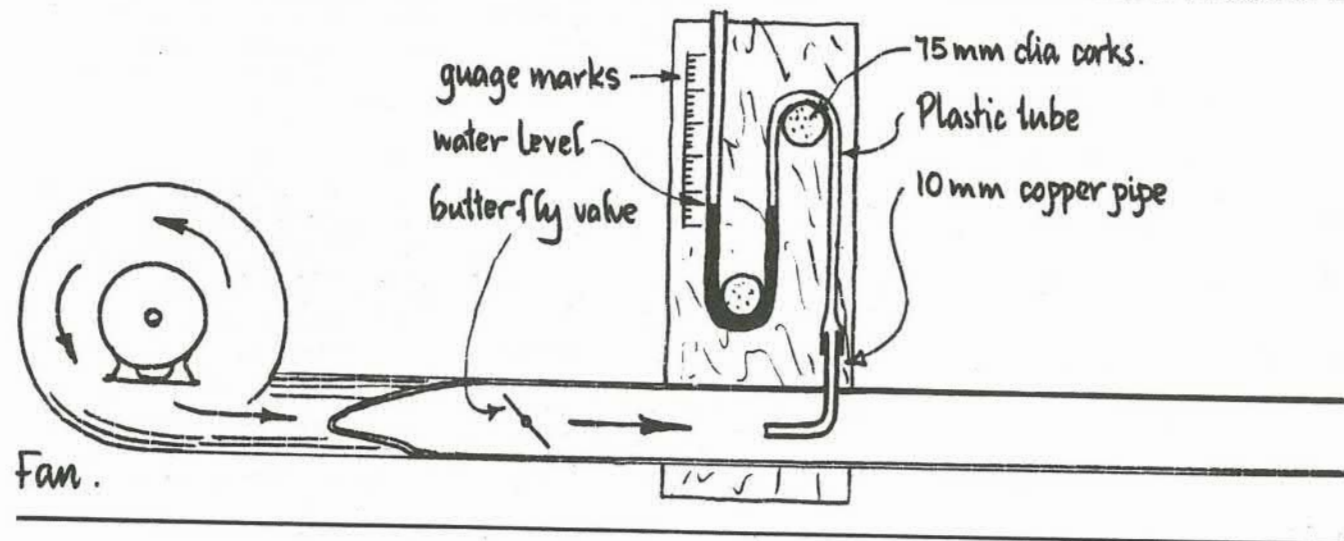
The wind increased and turned to the south bringing rain.

My neighbour was nearly blotted out. Turned fuel back to investigate. All well with the neighbour so up went the fuel again. Time dragged on and by 1 a.m. in a gale with 3 feet of flame coming from the chimney, cone 8 came down and 10 was bending. By this time cold, wet and fed up, I'm thinking of all the places I'd rather be than tending a kiln I know nothing about.

At 3 a.m. all done. Fuel consumed was 65 gallons over 20 hours. The firing turned out to be most successful so in retrospect everything was worthwhile after all. Some small adjustments are still needed and a word or two to the weatherman might help.

I am also open to suggestions from readers.

Peter Hoskins,
C/o Manutahi P.O.,
via Patea.



Firing with natural gas.

Sharyn Hancock

This article is further to the article on the Capon Kiln published in the last Potter (Vol. 17/2). For this kiln new burners have been designed to do away with noisy blowers.

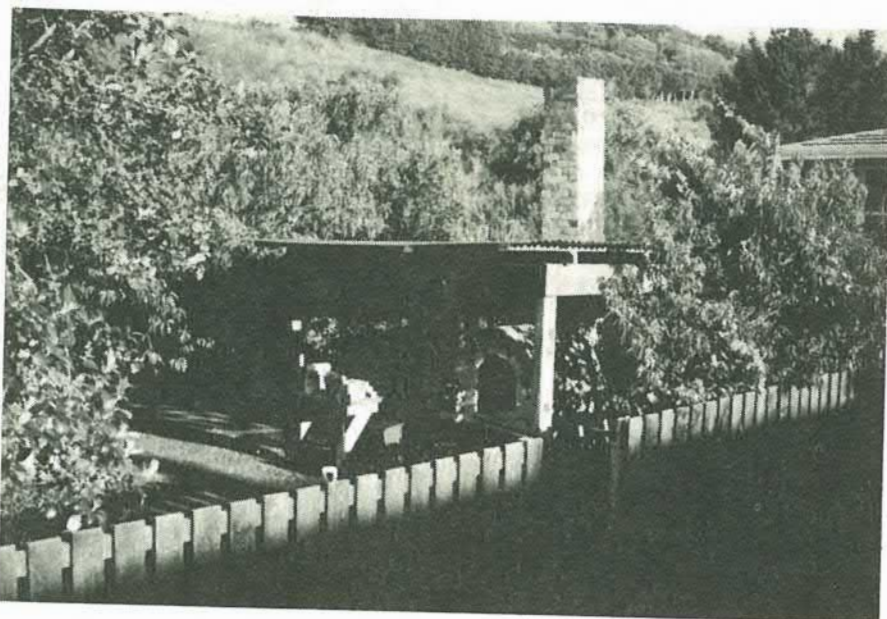
My basic kiln design is from Daniel Rhodes' book "Kilns, Design, Construction and Operation", page 215, figure 186. It has been operating successfully since October when the burners were installed.

The local gas authority was very happy to allocate me 350 mm water gauge (.5 lbs/sq inch, 3.45 kPa) provided I could come up with a suitable burner. After reading Daniel Rhodes' book my husband determined it could be done in spite of a lot of local scepticism. I finally contacted Mr Daniel Tyrrell who was prepared to meet the challenge. He emigrated from England 4 years ago and runs his own firm in New Plymouth, Seaflame Gas Limited, installing industrial, commercial and domestic gas appliances. He has had considerable experience with both town and natural gas and worked on the North Sea gas line conversion.

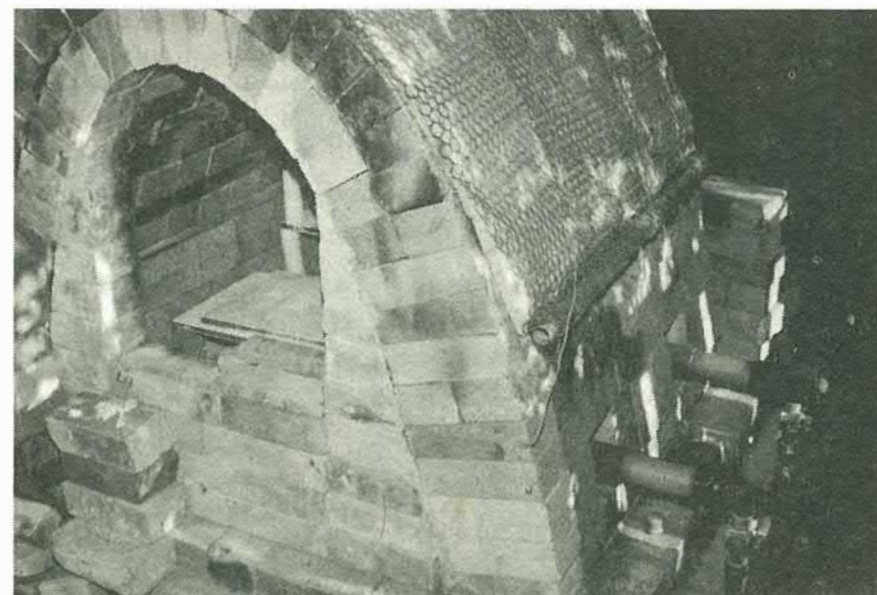
The burners are inspiring and can throw from a 100 mm to a 1200 mm flame. They are extremely simple to operate and reduction is achieved at a finger touch by adjusting the primary air. If ever wanted, a complete oxidation firing can be accomplished as well. There is only the sound of combustion. My neighbours know I'm firing only when they see the heat haze above the chimney. The burners can be unscrewed and removed after each firing allowing the ports to be bricked up. My glost firing takes six to eight hours and the average cost of a bisque and glost firing is \$12.

The patent is pending on the burner design and Mr Tyrrell, combined with another New Plymouth firm, D.H. Holyoake and Company Limited, Heating and Ventilating Engineers, hopes to produce the burner at a price comparable to that of a pot burner.

Back of kiln showing master valve, meter and regulator



View of kiln, 3 x 3 x 3 catenary arch, height of chimney 3.5 m (12 ft)



This photograph shows the position of the burners and the caps which screw on the manifold when burners are removed after each gloss. We used no mortar in our arch and for insulation have a layer of vermiculate over the outside and an insulating blanket of Fibrofax over that. The blanket will stand 1100°C and is available from Winstones — a highly recommended way of insulating

Una Sharpley at Country Arts.

In August '75 Country Arts mounted its first Exhibition of Outdoor Pots — a display of garden pieces by Una Sharpley. This distinguished Papakura potter — who, despite her prodigious output, finds plenty of time for teaching and helping (her generosity to novice potters is legendary) — made

nearly 200 pieces which were viewed in the course of one weekend by an estimated 2000 people.

In the photograph Una Sharpley discusses the finer points of bird-baths with members of the public. To the right towers an extremely tall coiled sphere on a thrown foot; above and to

the left of Una a candle-owl (for barbecues) drowsily surveys the exhibition.

An exhibition of pots by Yvonne Rust at Christmas was just as successful, and three more outdoor shows are planned for 1976.



A New Zealand Potter's Geology pt. 1

Barry Brickell

Over the next few issues of the POTTER I shall try to give a useful account of the basic and highly pertinent study of geology. It seems that most potters have a scant knowledge of it. Most of the material presented here was gleaned when I was a student at University many years ago, so I would ask that the most scientifically advanced readers kindly forgive me for inaccuracies, as I am not an academic and have had little opportunity to peruse the contemporary literature.

The potter, earning his living by his craft, is more concerned with the basics of geology rather than its more academic aspects. For those who become fascinated with the sheer rugged grandeur of the subject there is a welter of books and papers readily accessible in the major university and public libraries.

Geology is a general term for the study of the earth's crust. It is divided up into more specific subjects as follows:

Mineralogy — the study of minerals, occurrences, structure etc.

Petrology — the study of rocks.

Petrography — the study of rocks and minerals using a specially designed microscope which enables a beautifully clear visual picture of the sample to be seen in great detail. Specially prepared slides of the sample in thin section are made up.

Palaeontology — the study of fossils with special reference to their time scales related to surrounding rocks.

Geomorphology — The study of landscape forms, their origin and structure. Best reference, Professor Cotton's "Geomorphology of New Zealand", — an excellent book.

Economic Geology — the study of commercially viable mineral deposits, including petroleum.

Seismology — the study of earthquakes, types, origin, effects and uses in giving information on the deepest structure.

Volcanology — the study of volcanoes, including plutonic as well as volcanic rocks.

Stratigraphy — the study of rock strata, with special reference to the order and type of deposition and factors upsetting the simplicity of this order subsequently. (See Fig. 1)

There are probably some new branches in the technology about which I know nothing, as the subject is continually advancing due to vast modern research campaigns.

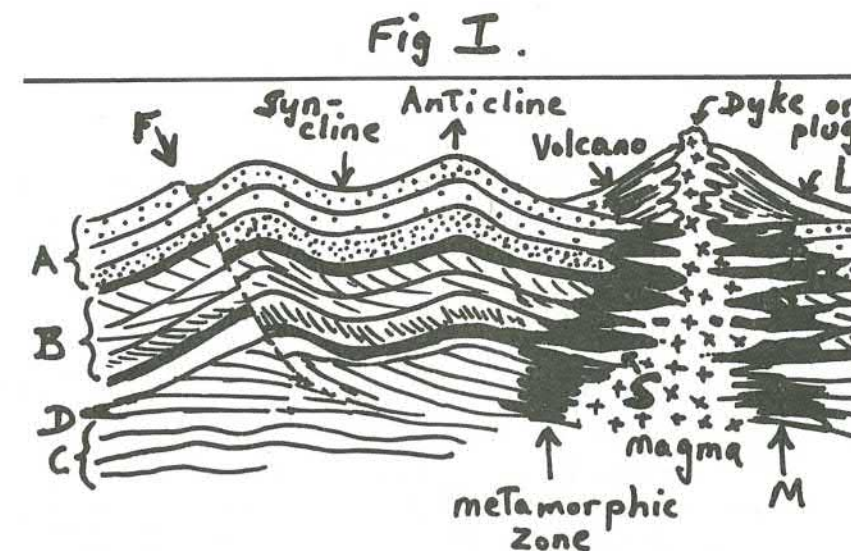
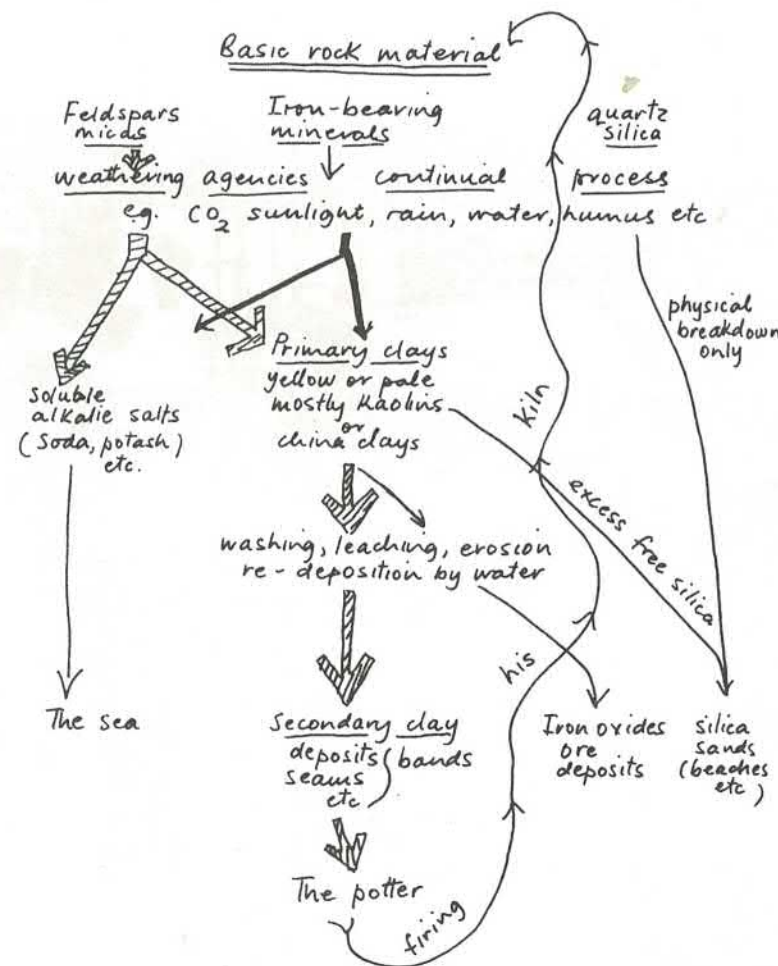
One of the biggest problems in discussing a scientific or academic subject with the layman (includes potters!) is the terminology used. All those formidable words we shall need to get to know, but with good manners I shall attempt to introduce each as we need it.

Firstly, let's put the horse before the cart and define the terms rock and mineral. A rock is a naturally occurring material which consists of one or more minerals. A mineral is a naturally occurring pure or fairly pure chemically simple substance of one kind, e.g. kaolin, silica, feldspar, limestone etc. Rocks and minerals usually have been formed into layers called

strata, the general rule being that the oldest rocks lie at the deeper levels of the formation. This simple order is often upset by cracking and shifting (faulting), by slow and gradual folding or bending of the strata. The terms for the various "upsets" or phenomena which later on disrupt the simple order of deposited strata are indicated in Fig. 1.

The three major types of rocks are: **Sedimentary.** Rocks formed from the gradual hardening or compacting of sediments, formerly deposited under water (or sometimes aerially) in recognisable layers, or bands.

Igneous. Rocks which have cooled and solidified from a melt within the earth's crust. The basic molten matter is magma. If the solidification (crystallisation) occurs on the surface the rocks are volcanic; if crystallisation



A and B are separate sedimentary rock series, belonging to the same formation. They are separated by disconformity D from a previous formation, C.

Magma has welled up, flowed into gaps in strata to form sills S and dykes as shown. Overflow has formed lava L which has solidified in sloping layers, of a volcano. Metamorphic rocks have been formed by the heat of the magma on surrounding rocks, M.

occurs underground they are called plutonic.

Metamorphic. Usually sedimentary rocks which have undergone a change of chemical or physical structure by heat and/or pressure. (See Fig. 1. M). Usually they become more dense and hard. (Compare firing of clay in kilns). Pottery bodies are a sort of metamorphic rock.

New Zealand contains an abundance of all three rock types. Most of our plastic clays have come from the weathering of sedimentary and igneous rocks. Clays such as the Otago schist, a platey, dense, shiny crystalline rock which has supposedly been metamorphosed from an ancient feldspathic sandstone deposit of vast area and great age. The most striking example of a metamorphic rock I have ever seen is the natural terracotta layer in the old quarry at Mt Wellington, near Auckland. Here, the lava from

this old, extinct volcano has flowed down over an older clay deposit and baked it much as in a hard biscuit firing. What a splendid source of natural grog for the local potters. Sufficient for the metamorphic rocks; they are fairly uncommon compared with the vast areas of sedimentary and volcanics upon which I shall be making copious potter's notes at a later stage.

The Geological Map

Every diligent potter should have the geological map pinned up on his workshop/studio wall. It is obtainable from major booksellers or Government printing offices, and comes in a folder with a good general description. From time to time I shall be referring to it and hope to be able to clarify it for potters. The base map, covering the whole of New Zealand, is to a scale of 1 in

2,000,000, comes in "17 lovely colours" to show up the distribution pattern of the rocks, and opens out to about 27" x 36"; making a fine picture on the wall. It is compiled by the N.Z. Geological Survey and new up-to-date editions are put out from time to time.

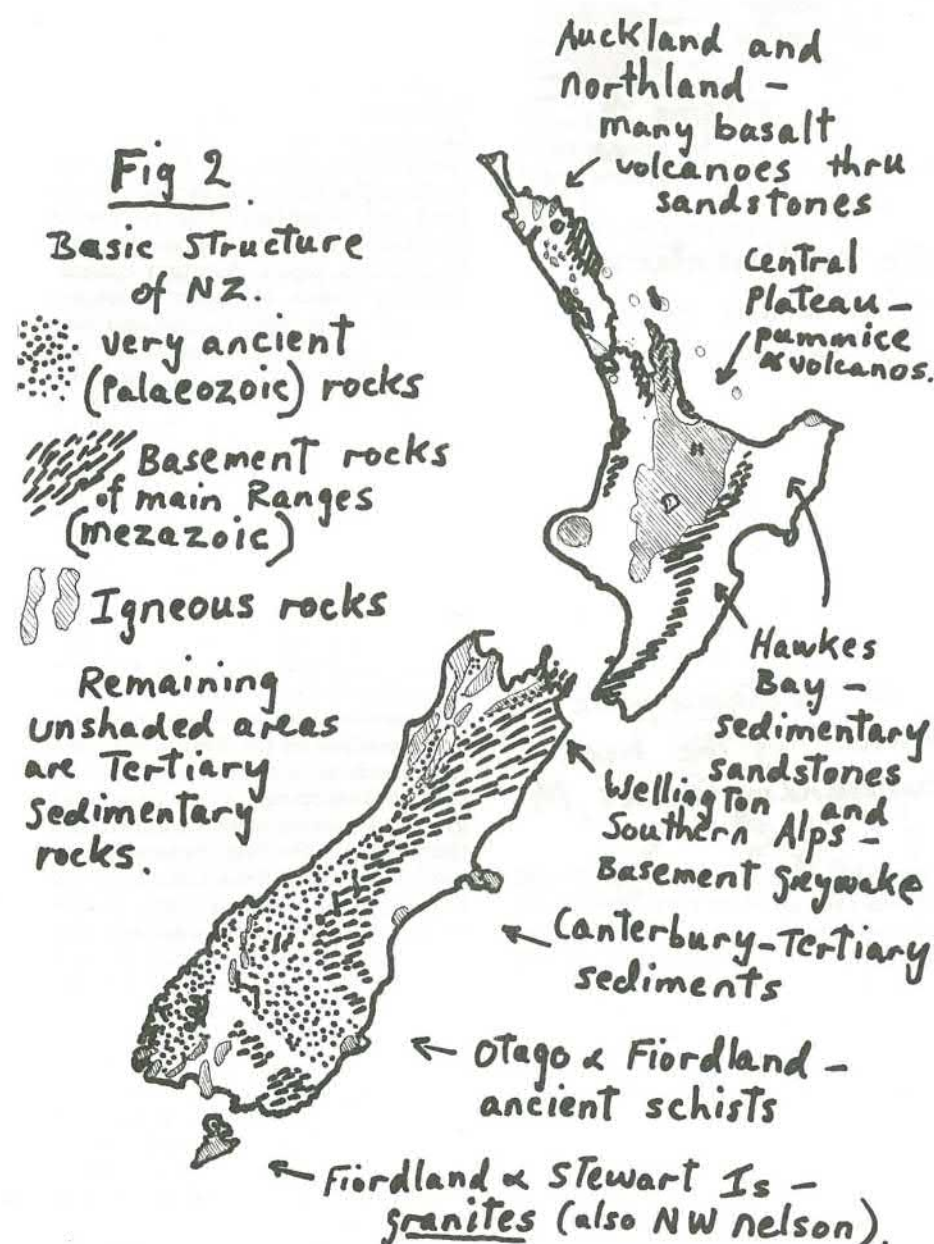
In this article I shall avoid referring to it as much as in later issues, so that readers will have the opportunity of obtaining a copy in the meantime.

Figure 2 is a very rough summary of the geological map. Note how the South Island has rocks of greater age than the North.

Note also the Y-shape of the country. This expresses the fact that New Zealand lies at the junction of two major faults in the earth's crust. One of these, i.e. from Tongariro and through Auckland and Northland, can be traced through the Pacific, traversing the Philippines, Japan, Aleutian Islands, and into Alaska. The other, following the axis of the South Island and running through Hawke's Bay, is part of a system of parallel troughs which extend under the sea towards the north-east. It is significant that our most recently active volcanic activity has been occurring near the junction, e.g. the vast pumice volcanic outbursts of the central North Island plateau, including the eruptions of Mts Ruapehu and Ngauruhoe. Note that the 'basement' ranges of New Zealand form the major backbone of the country. This is a rock called greywacke, about which we will be dealing in some detail later. It forms the crumbly, steep-sided hills and coastline of the Wellington district, such as the Plimmerton brick clay. Overlying the basement greywacke we have the vast areas and thicknesses of the Tertiary sandstones, mudstones and limestones, left as blank spaces on the map Fig. 2. It is from these sand and mudstones that most of our plastic stoneware and earthenware clays have been derived, by the process of weathering.

I feel that the time has now come to describe in some detail this process of weathering. It is rather like the reversal of the potters firing cycle, i.e. the slow and gradual change from rock to clay. In the following diagram, I have attempted to show the basic story without being too technical.

In what seems a futile and grandiose attempt to correlate all the above information into a sort of rounding off to terminate this particular article, let us try to find out where to expect the most suitable clays in New Zealand. Obviously, weathering is a very long process, taking many millions of years. The pumice and rhyolite volcanic deposits of the Rotorua, Taupo, Central



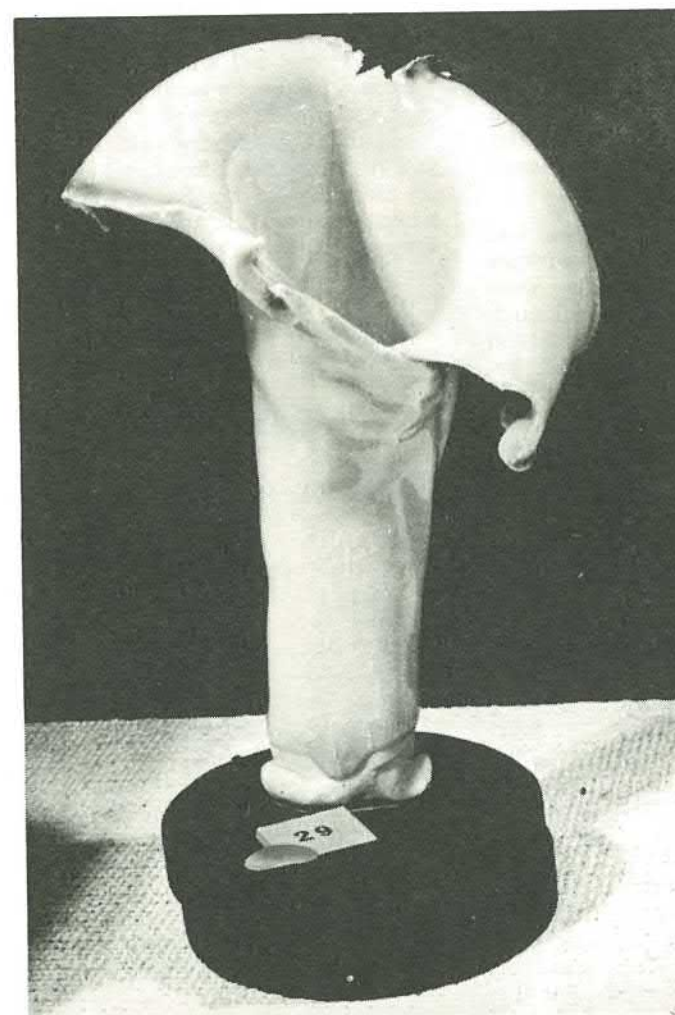
King Country, area are very recent, geologically speaking. Hence no clay, although we find some kaolins which are virtually unplastic. North Auckland is very complex, consisting of older sandstones, broken through by younger basaltic volcanoes and all overlying but horribly tangled up with faulted basement greywackes. We thus find a very remarkable variety of clays, ranging from pure kaolins (e.g. Matauri Bay), fireclays and ball clays (e.g. Kamo coal measures and related, decomposed sandstones), terracottas (from weathering of basalts and iron sandstones), bentonites and natural stoneware bodies. In Hawke's Bay and Taranaki, the relatively recent and vast deposits of tertiary sandstones have only partially weathered into plastic clay, in scattered places. The older Hawkes Bay glauconitic sandstones have yielded a good grade of terracotta (e.g. late Fullford pottery).

In the Wellington-Manawatu district, some of the primary yellow clay from the greywackes has been eroded and redeposited. This has produced occasional deposits of fine, whitish plastic stoneware clay, which is highly prized by the local potters. Some of these potters seem to be equipped with a special kind of radar for such deposits, which they tend to guard like dog and bone. I am sure that the other greywacke areas of New Zealand could also yield such clays, although the deposits would tend to be small and irregularly located. This is a blessing in that big-time commercial interests would consider such pockets uneconomical, whereas to the potter they are a Godsend. (Ha!)

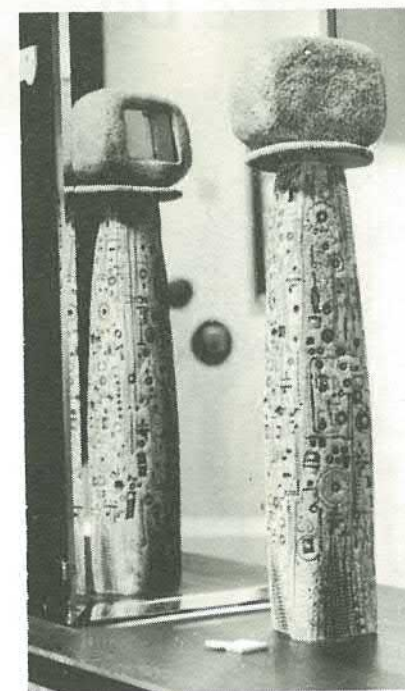
In the South Island, Nelson is considered a potter's haven. Small wonder. They have weathered granite, sandstones, argillites (slatey, fine-grained old sandstones) and countless mineral deposits. Similarly, parts of Westland are equally rich, and these areas will warrant further study in a special article at a later date.

The Canterbury Plains are too recent for clays, but the foothill country is most promising. This is not only due to the Southern Alps greywacke, but also to the odd, ancient volcano (e.g. Mt Somers) where feldspathic rocks have had time to weather. Similarly around Dunedin and Invercargill, which areas have a very interesting history of special types of volcanic outbursts, resulting in some low silica, high alumina rocks and clays. We have mentioned Otago and the marvellous Hyde ball clay. This summary should give the beginning of an insight into a potter's geology which we can probe more deeply in the next issue.

Exhibitions at Alicat.



Above: From the first exhibition exclusively of porcelain, Bronwynne Cornish "Arum Lily" celadon glaze. Right: Ted Kindleysides "Tower with figures" white matt feldspathic glaze flushed pink in places from migrating copper. Below: Cut clay bowl by Doris Dutch. Right in a separate exhibition printmaker Ted Dutch who has turned his attention to clay, displayed interesting ceramic sculptures.



Yvonne Rust's summer school



1976 began with a cheer: Yvonne Rust's Pottery School. With such a dynamic, knowledgeable and hospitable person as Yvonne the school couldn't help but be a success. If rain drove us indoors, then it only made discussions easier, more frequent and interesting and arguments more vigorous and forceful or, led by George, the pinchpots more numerous. Day and night Yvonne was always a starter, whether it was pots or politics.

The main theme of the school was "clay" in all its aspects. Different types which had been brought along were thrown, fired and compared and much knowledge was shared — even if I did have to lose a pot before I would believe that you can't fire an Auckland clay with a glaze to 1300°C. Yvonne thinks Auckland clays fire naturally to 1200°C and feels it is at that temperature that they should be fired to. We had trouble with clay bloating, another interesting problem for which we hope Bill of the towel brigade will now have the answer.

Yvonne is worried about securing clay for future years. She urges all potters and societies to make provision NOW: "Potters must have their own mining rights before it is too late. We can't afford to leave it all in the hands of a few large industrialists — we

could get pushed out", she argues. "The New Zealand Society is the group which must organize this — of course it costs money..." We were all convinced; but what is the next move?

We fired a new salt glaze kiln in terrible weather, but with a wonderful view and an equally wonderful length of time to observe it.

Another first: Sandra's swim in the sea. We had a break from pots and all set out gaily for the Poor Knight Islands. These are fascinating to see: the shapes of the towering cliffs, the caves, rock arches and inlets, and beneath the waves an amazingly colourful life is observed by those who disappear with snorkel and scuba gear. The sea shells and plant life are interesting in form, and there are masses of brightly coloured fish. On the way there we passed through shoals of Trevalli chased in their turn by flocks of gulls, and Donna caught our supper.

The visit to Portland Cement Works to sort and collect bricks going cheap was fun: in this vast concern even the wind and dust were massive.

Good things must come to an end. With our pots clutched in our hands we waded barefooted through the rain and away to make better, bigger and, don't forget, more creative, pots. Thank you, Rusty.

Flora Christeller

Barry Brickell's potter's Do.



The 1976 Potters' Do at Driving Creek began with a couple of fine days. A moderate number of enthusiasts arrived. On the third day it began to drizzle. Steadily the rain set in. For the whole of the next week it alternately poured and drizzled with a sticky hot sun trying to create a sauna bath. Once you got into the mood it was exhilarating.

Tents were soaked and we had victims sleeping in the cottage and the pottery workshop, while the railway carriage was a castle — cosy, dry, elevated and above the turmoil. Down in the barn it was warm enough but floods were taking their toll.

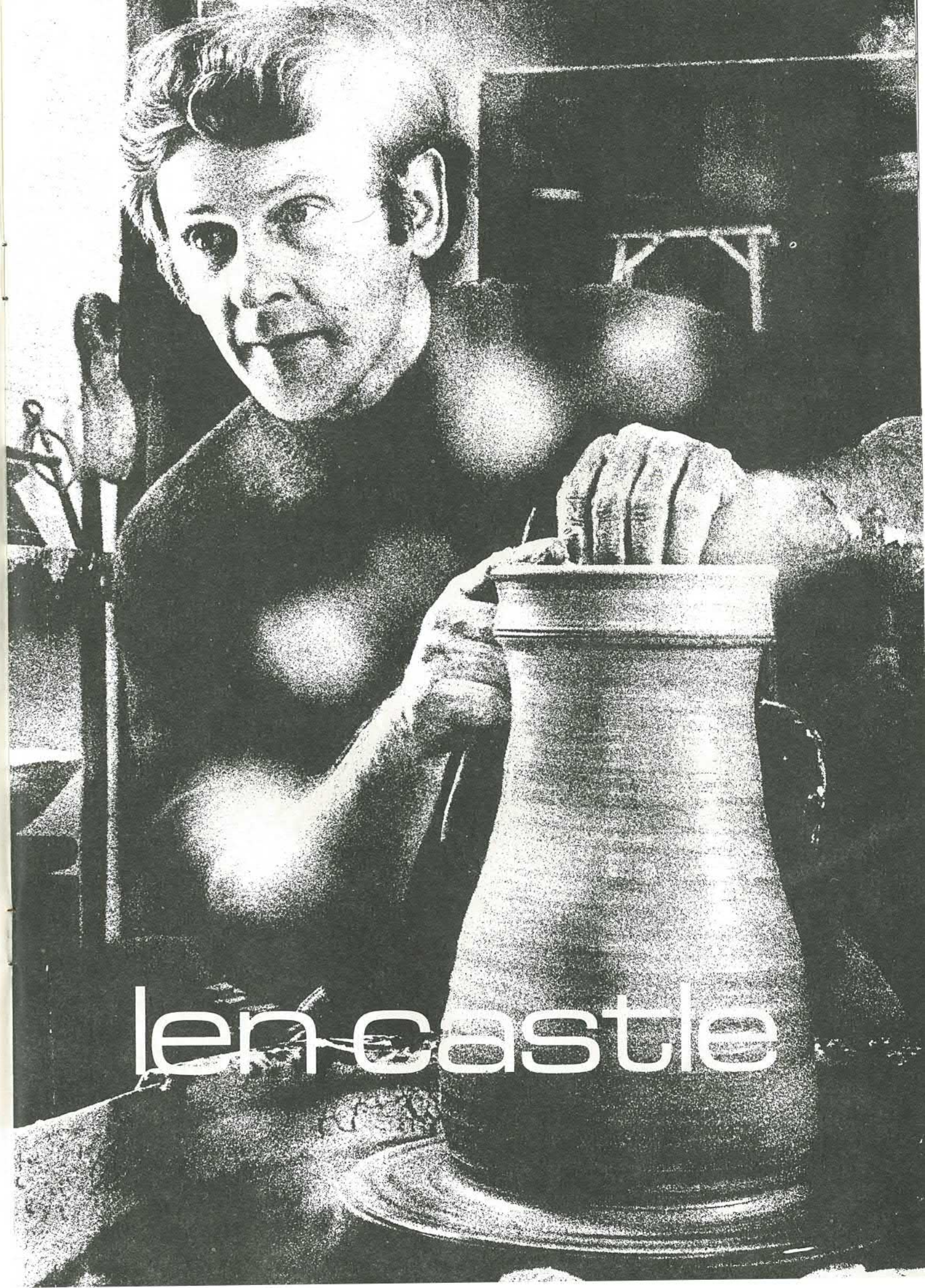
Suddenly after two or three days the keen young men decided to build a small wood fired stoneware kiln. We gave full sanction to this idea and within two days the old drip feed one was demolished and a crude but serviceable wood burner materialised. It boasts a little Dutch oven, about a 12 cubic foot chamber and a short brick flue with Presto's old iron funnel on top.

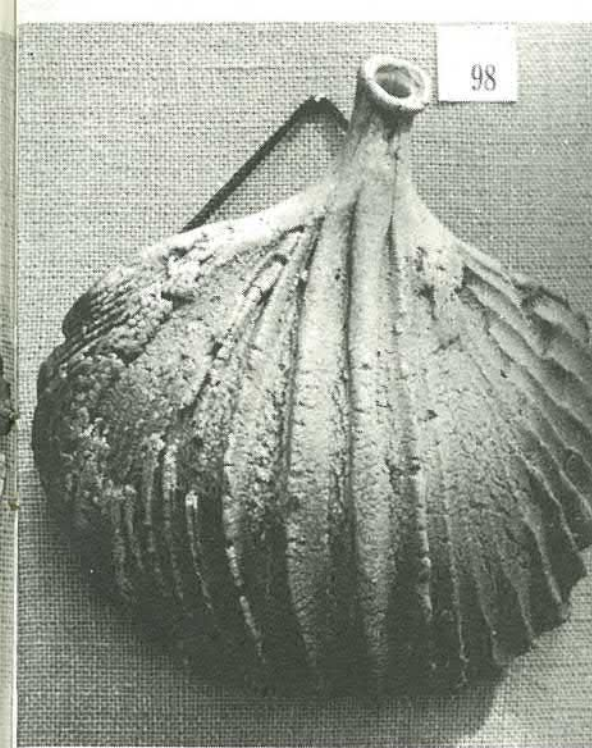
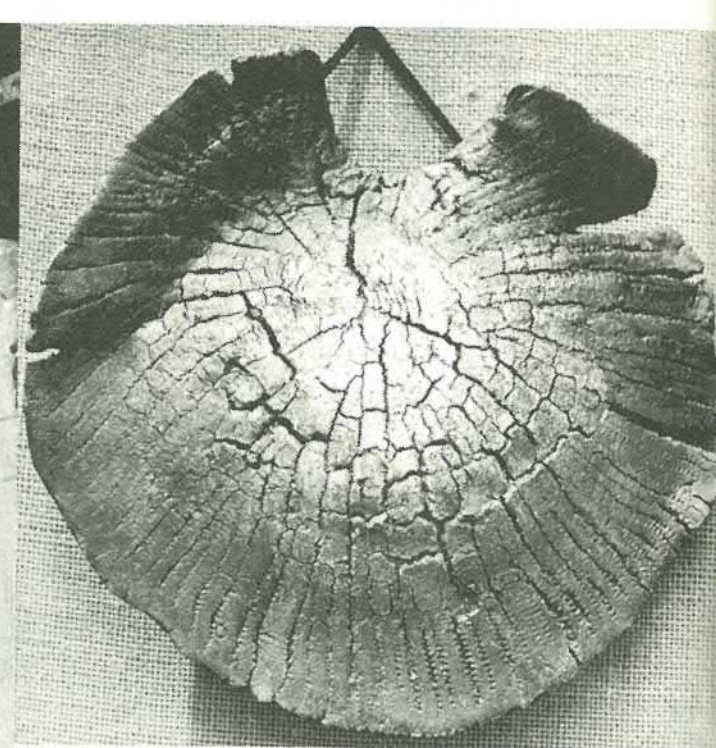
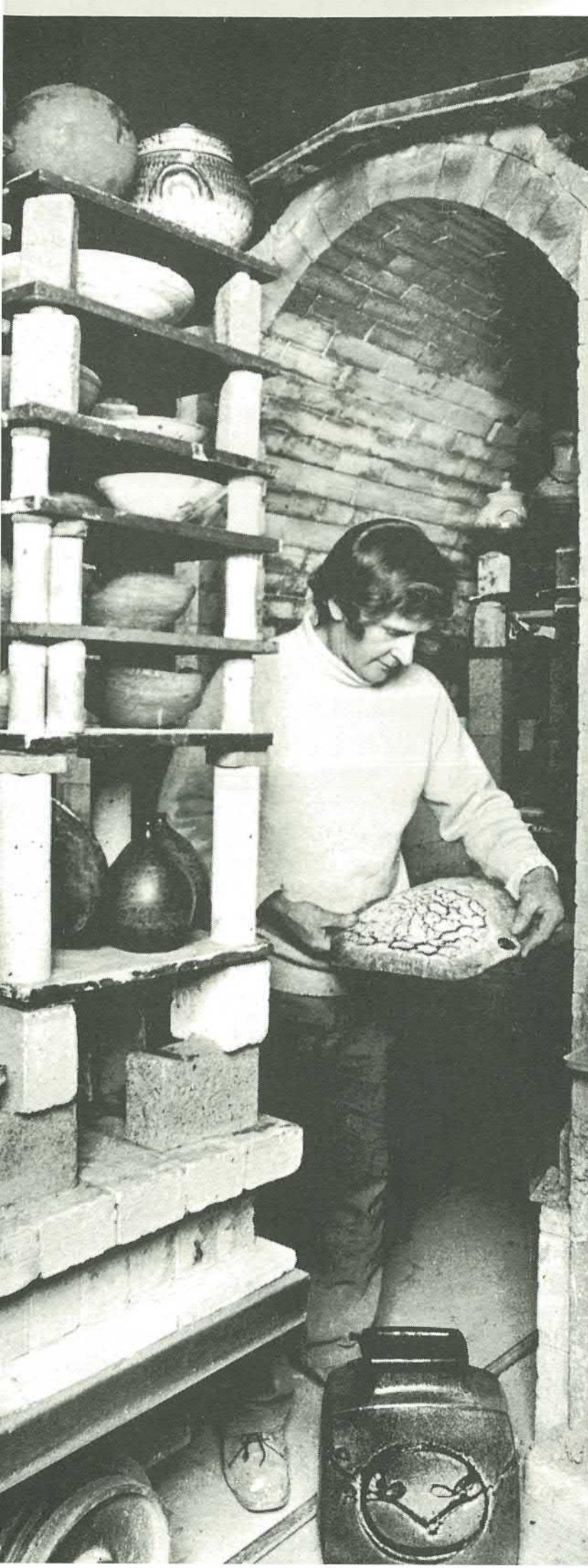
Meanwhile clay was being foot-wedged, and pots rapidly made for a firing schedule to take place on the last day. The pots were dried beside a bon-

fire under sheets of tin. The kiln duly stacked, a fire was lit early on the great day with John McCassey and his merry men as shift-firemen. Already Paul Tobin had prepared a whole sheep for the occasion, and despite the fungus growing weather it hung and matured without going too green. A sort of barbecue-roaster was erected under more sheets of tin and lashings of spuds were laid down. Came evening with some bangs from the kiln, the show began to come alive. By midnight the kiln had reached near 1300°C or a good stoneware, despite some wet wood. The sheep was slowly roasting on a manuka spit. At 12.30 it was on. Even the vegetarians were smacking their lips and relishing the finest flavoured mutton there ever was. It was a true climax.

Next day a sombre mood prevailed as shattered or distorted pots came forth. Never mind the kiln was fine and will be retained for next occasions. Next year of course the Do will go on as usual, now that we have become hardened and proved that even the weather cannot stop it. I consider that the theme of rugged, pioneering should be the prerogative of the Do.

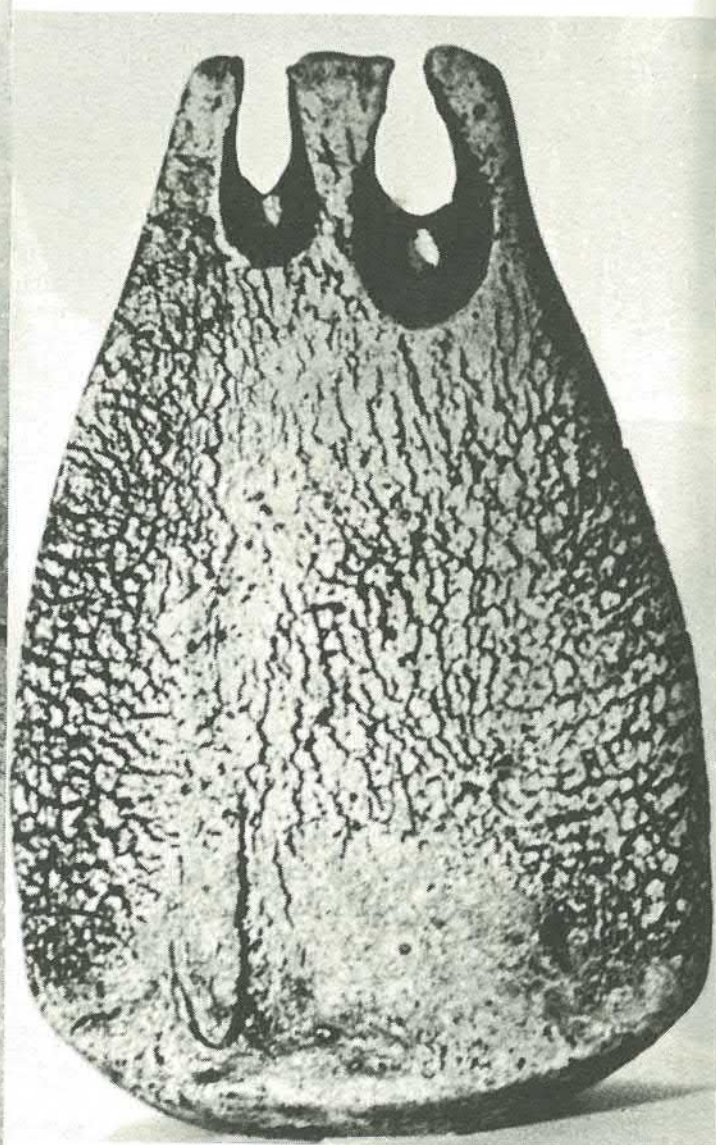
B.B.



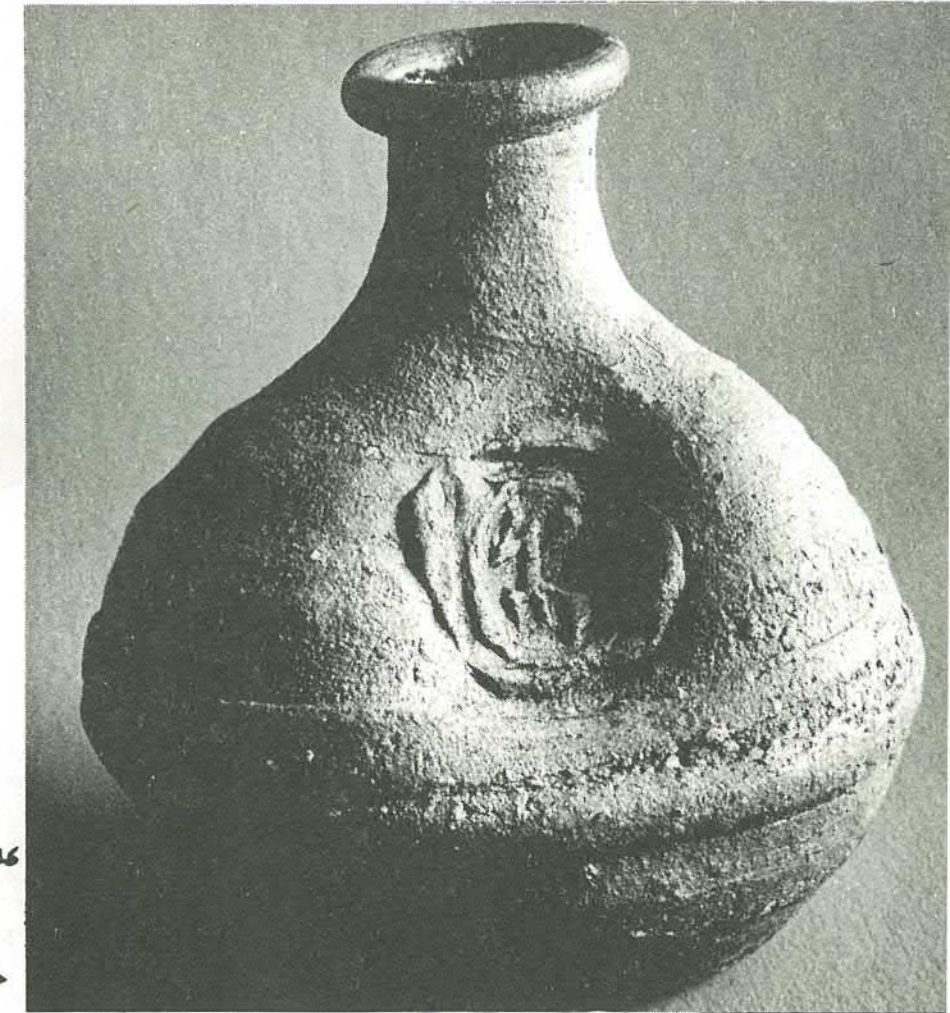


These ceramic forms have developed from working with lumps of extremely plastic clay; a process of exploration, discovery and development. The masses of clay may be rolled, folded, stretched, compressed and finger modelled. The soft, inner clay reacts with the more rigid clay of the surface and the interplay produces rich textures and ornamentation. Because the process of forming occurs from the outside (in such direct contrast with hollow pots made on the potter's wheel) they have an exoskeletal character, the suggestion of a previously flexible covering now hardened by drying and firing. These forms remind many people of natural things, but for my part I have no conscious desire to emulate the forms of the organic world. It is possible that from below the level of consciousness ideas well up and guide me towards forms that hint at the world of living things.

Firing temperature: 1250°C in a reducing atmosphere from 900-1250°C in an oil fired kiln. Unglazed surfaces washed or brushed with local, ochrous clays, burnt umber and manganese dioxide or a combination of these pigments.



Stoneware wine bottle. Ht. 16 cms
glazed interior, unglazed exterior



It is obvious to those who know my work that the subtlety of the behaviour of clay fascinate me. I find myself increasingly reluctant to cover the gritty, textured clay surface with glazes, often being satisfied to wash the surface of pots with thin layers of ochrous pigments to emphasise the interplay between clay, hands, tools and fire. As I work on the potter's wheel I am becoming increasingly aware of the importance of the unseen hand inside the pot that feels and stretches the clay, rather than the hand outside that conceals and often conceals the



*Len Castle's need for order is expressed in his house and working areas where living is in tune with the natural surroundings but under control. The architect designed the house on strong vertical lines to blend with the Kauri trees on the bush covered site on the Titirangi hills overlooking Auckland's Manakau harbour. Ruth Castle, left, makes woven baskets. Above, Ruth, Briar and Len Castle on the railway sleepers that form steps to the front door, before Len sorts pots for exhibition
 photos: Steve Rumsey*



Stoneware vase. Ht. 20.5 cms.
Colour, Reddish brown, white and grey.
Glaze, feldspathic-ash type.

Stoneware vase. Ht. 29 cms.
Incised decoration. Colour, reddish brown, white and grey.

I wanted to make some simple vases, economical to pack in the kiln and complementary in colour and texture to a variety of flowers.

Pots that could stand quietly in their own right, making their full impact when acting as containers. The basic cylindrical form offered interesting possibilities; variations in proportions, profile, types of lines (to allow variations in the method of displaying flowers and foliage). As often as possible I used the richness of structural ornament that appears during forming, glazing and firing. The throwing of these pots is accomplished quickly and there is the opportunity to make quick, intuitive assessments and decisions. In ones finest pots I'm sure there is a balance between thought and intuition; when feeling, thinking and acting have worked together.

For me, pots that appeal show a unity between the potter, his materials and the processes of making.

In this vase I aimed for a pot that was robust in feeling, stable, and with a neck that would hold plant stems effectively.

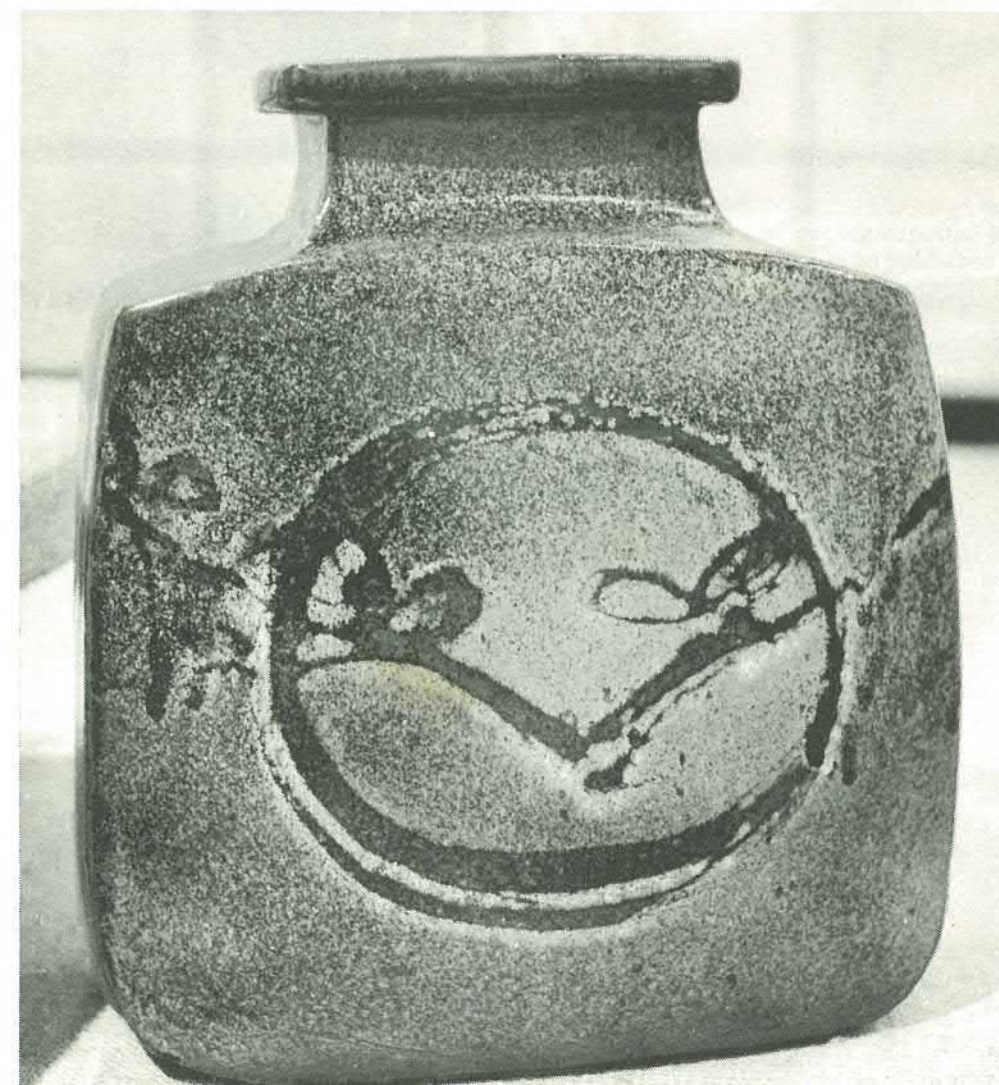
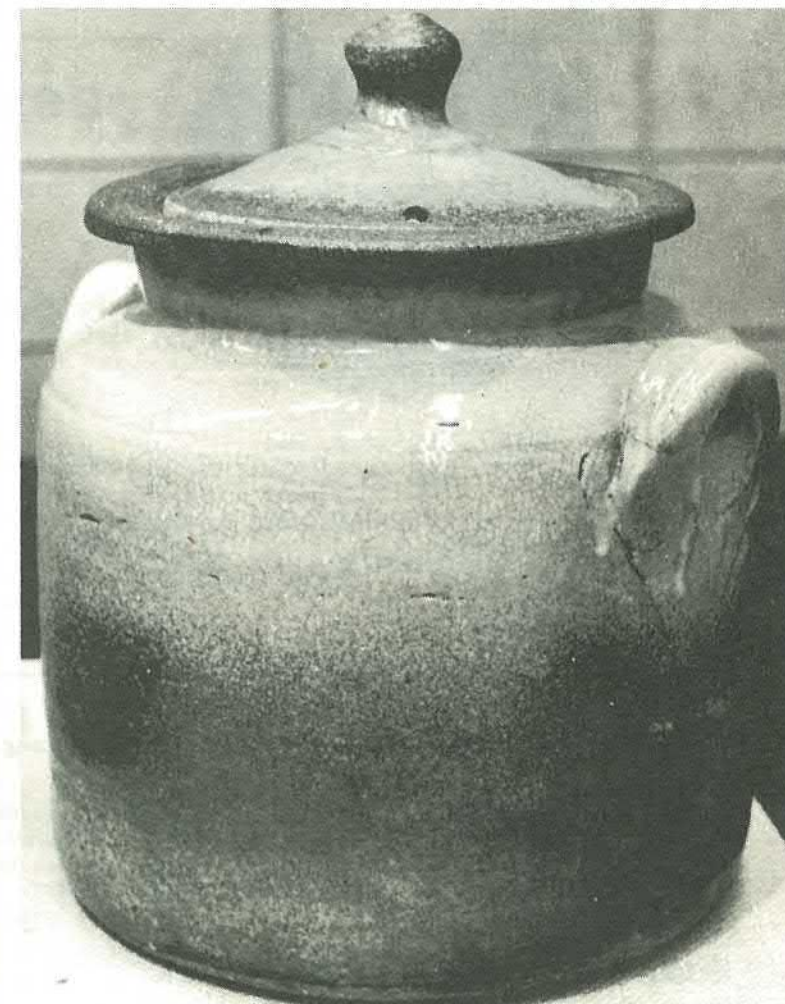
On the potter's wheel the inside hand stretched the initially formed 'knuckling ridges' to suggest a slow, stable, upward movement.

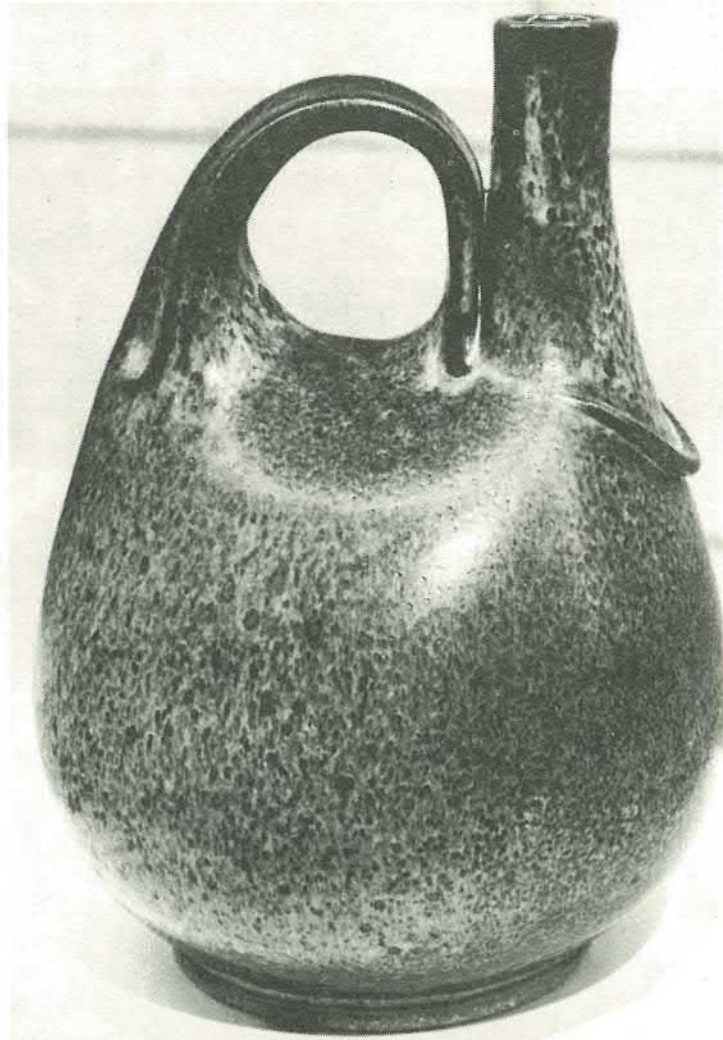
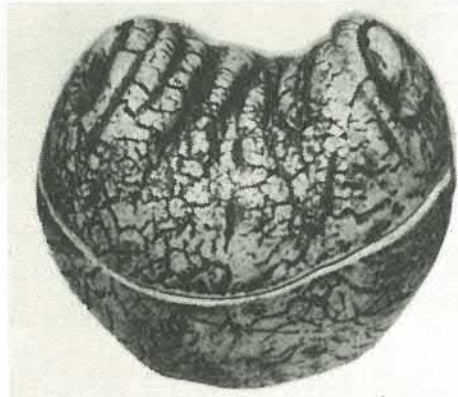
A feldspathic-ash glaze settled as a thicker coating in the hollows following the structural ornament of clay, glaze, forming and firing processes to show their character.

Small, stoneware crock. Ht. 33 cms.
Shino type glaze

Stoneware vase. Ht. 35.5 cms.
Saturated iron glaze, wax resist decoration,
final coating of a semi-matt, white glaze

Press moulding is the third method used for forming pots in the workshop. The vase illustrated was made in a four piece, plaster of Paris, press mould. Oven proof serving dishes, fruit dishes and some vases are made in this manner. The original shapes were modelled in clay.





Ring boxes. Up to 8 cms in diam.
modelled out of solid
lumps of clay, later hollowed out.

Stoneware cooking oil pourer. Ht. 21 cms.
Colour: mottled coffee brown and sand.
Saturated iron glaze covered with a thin
layer of a white, semi matt, high tale-
alumina glaze.
Basic parts made on the potter's wheel.

On the subject of glazes

Alan Caiger-Smith
gives the following glaze recipes

CLEAR GLAZE

78% Lead Bisilicate
13½% China Clay
4½% Flint
4% Whiting
1040° — 1080°c.
If higher temperature re-
quired increase flint by 2½%
and China Clay by 2½%.

TIN GLAZE

3050 grams Lead Bisilicate
250 grams China Clay
650 grams U.K. Feldspar
450 grams Borax Frit
(P2248)

500 grams Tin Oxide
100 grams Zinc Oxide
1060° — 1080°c.

High fired copper glazes

On page 36 of Vol 17/2 there was an
omission in the barium flux formula
which should have read:

Na₂O 0.5 SiO₂ 2.5
BaO 0.5 B₂O₃ 0.5

In the paragraph about aubergine col-
ours using reduced copper and cobalt,
the additions to the glaze should be not
more than 2% copper (not 23 parts as
printed) and ¼ cobalt in a glaze which
will give an alkaline response.

Below Betty Ivin gives a copper blue

glaze for 1220°c in an electric kiln for
those frustrated potters who can't get
reduced copper reds in their electric
kilns.

Alkaline Copper Blue (oxidised firing,
1220°c.)

(about the colour of a thrush's egg).

Formula:

K₂O .2131 Al₂O₃ .4069
CaO .5930 SiO₂ 2.991

Li₂O .1938

Batch Recipe: 36 Feldspar

36 Petalite

18 Whiting

9 Zirconium Silicate

1.5 Black Copper Oxide

Coming exhibitions

The N.Z. Academy of Fine
Arts is separating pottery from
graphics and sculpture this year. The
Academy Pottery Exhibition will be
held in Wellington from August
20th-5th Sept. Any potter may submit
work not previously shown in Wel-

lington for selection by August 3rd. It
is hoped that this will become an an-
nual exhibition of national signifi-
cance.

The N.Z. Society of Potters
exhibition will be in Christchurch this
year at Labour weekend.

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easier for us if you send personal che-
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stralian bank. We'd avoid cumbersome
conversions, and you extra charges at
your end.

Scraps of info.

Pottery in Australia published by the
Potters Society of Australia twice
yearly. Subscription is \$A4 from the
editor, 39 Mary Street, Longueville,
Sydney 2066.

Ceramic Review published by the
Craftsmen Potters Association of Bri-
tain. Annual subscription £4 from 7
Marshall Street, London, WN 1FD.

Studio Potter published biannually by
a group of professional potters in New
Hampshire. Subscriptions to Box 172
Warner, N.H. U.S.A.

Tactile a bi-monthly magazine of the
Canadian Guild of Potters. Overseas
rates \$C15 333 King Street, West To-
ronto. M5V 1J5

John Parker recently graduated from
the Royal College of Art, London.
"Ceramic Review" has a photo of a
bowl and a bottle which were among
his exhibits at the Oxford Gallery in
October.

Potters abroad

Audrey and Jim Brodie are in Jakarta
for a year where Jim has an assignment
with UNESCO. Audrey says "I am join-
ing the Indonesian Ceramic Society
and am working with a volunteer
group at the Jakarta Museum in the
ceramics section translating cards
from the original Dutch into English
and Indonesian. Am enjoying it tre-
mendously because one gets to know
such a wide range of classic Chinese
pots. There is considerable interest in
what is going on in the pottery field in
New Zealand."

Anne Turnbull is now handling the
subscription side of the Potter ad-
ministration. Esme Marris who kept
the wheels so well oiled for seven
years, does not now have the time to
give. Potter subscriptions have trebled
during this period. We now print 4,000
copies. Anne is experienced in this
kind of work so we'll keep progressing
as smoothly as every.

Books

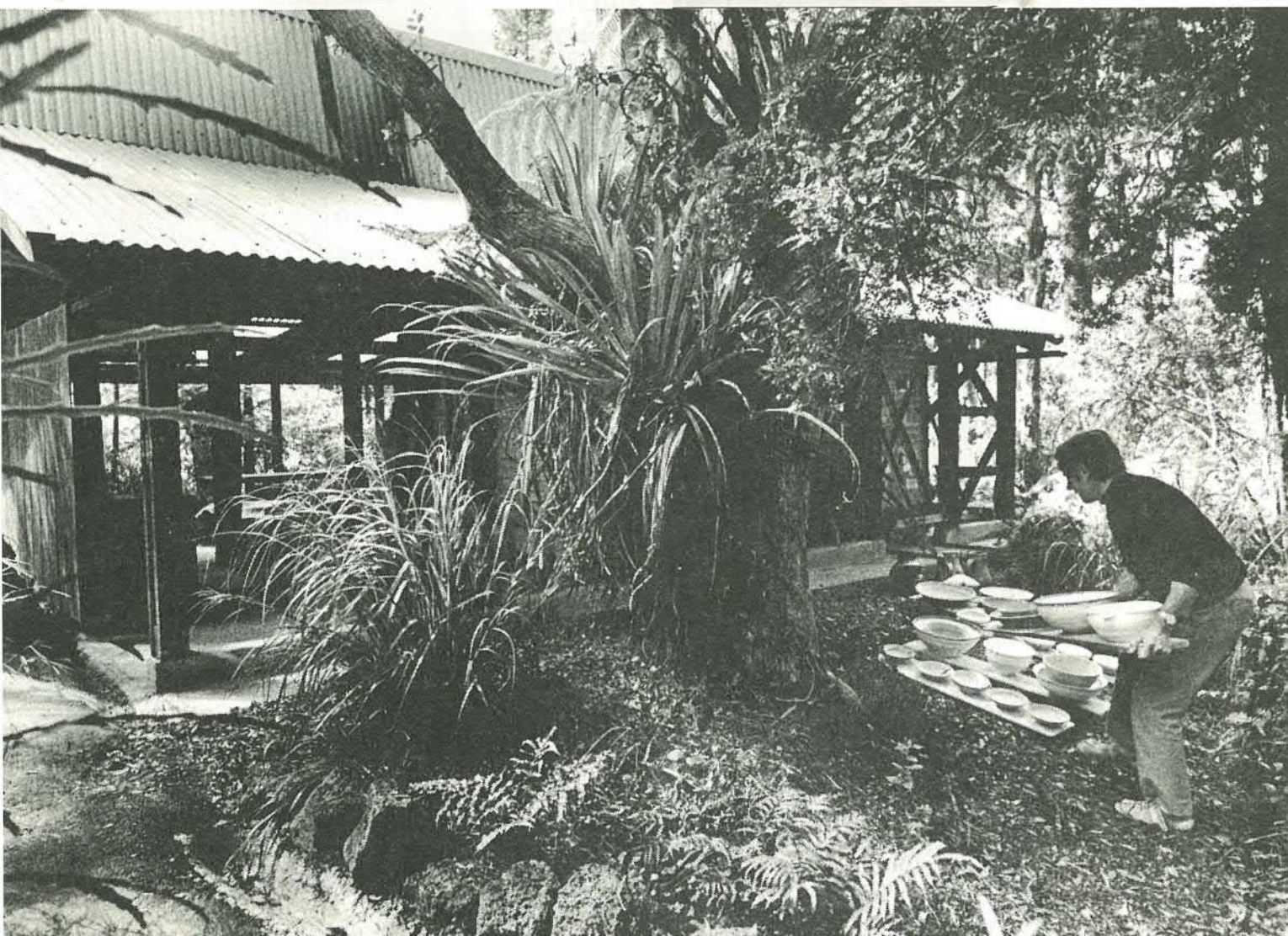
Geology and materials

A glance through the list of contents
of geologist/potter Jim Scholfield's
book, to be published later in the year,
promises detailed information to help
New Zealand potters come to grips
with natural materials.

"The book developed from a series
of lectures requested by the Auckland
Studio Potters Association to assist
them in making use of local materials,
particularly local clays, how to use
geological maps, how to use chemical
analyses in developing new glazes and
how to understand the properties of
the different types of clay materials. I
was aware that this was a tall order so I
thought I may as well look at the clays
throughout New Zealand while I was
about it. The result is called "Materials
for the New Zealand potter".

We hope that we can review this
book in the next issue.

World Craft Council Conference is to
be held from June 6 — 12 this year at
Oaxtepec, Mexico.



Alan Caiger-Smith.

Alan Caiger-Smith English potter working in the majolica tradition was guest exhibitor at the N.Z. Society of Potters annual exhibition and afterwards took schools throughout the country. Christopher Vine of Nelson attended the school in Wellington. Beverley Luxton was in the Auckland class. Stan Jenkins took of the photos of the pots, Roger Brittain of the demonstration.

One of my greatest pleasures is watching skilled work done with deftness and economy.

The bulk of Alan's message was concerned with decoration, a word he dislikes for its present connotation of something superficial — even superfluous. Ornamentation? Embellishment? These words seem worse and yet through history it has been fundamental to human beings to elaborate surfaces, structures, utensils, apparel.

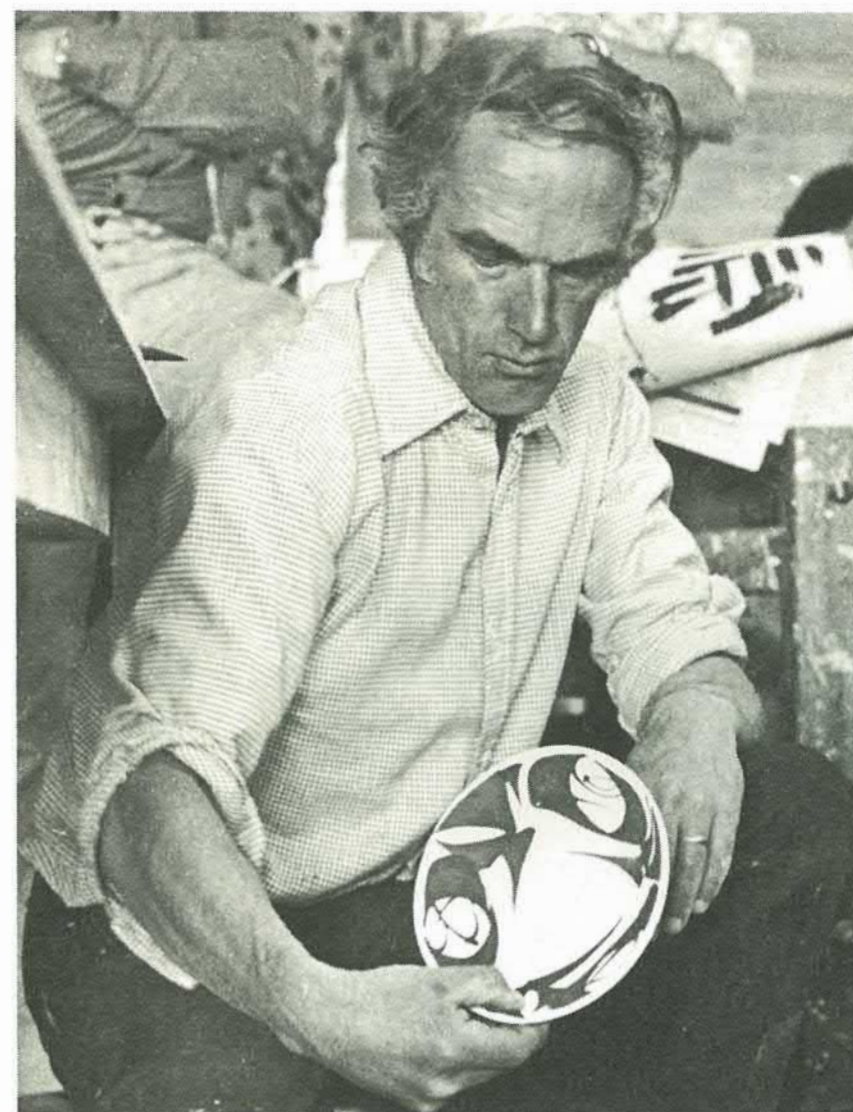
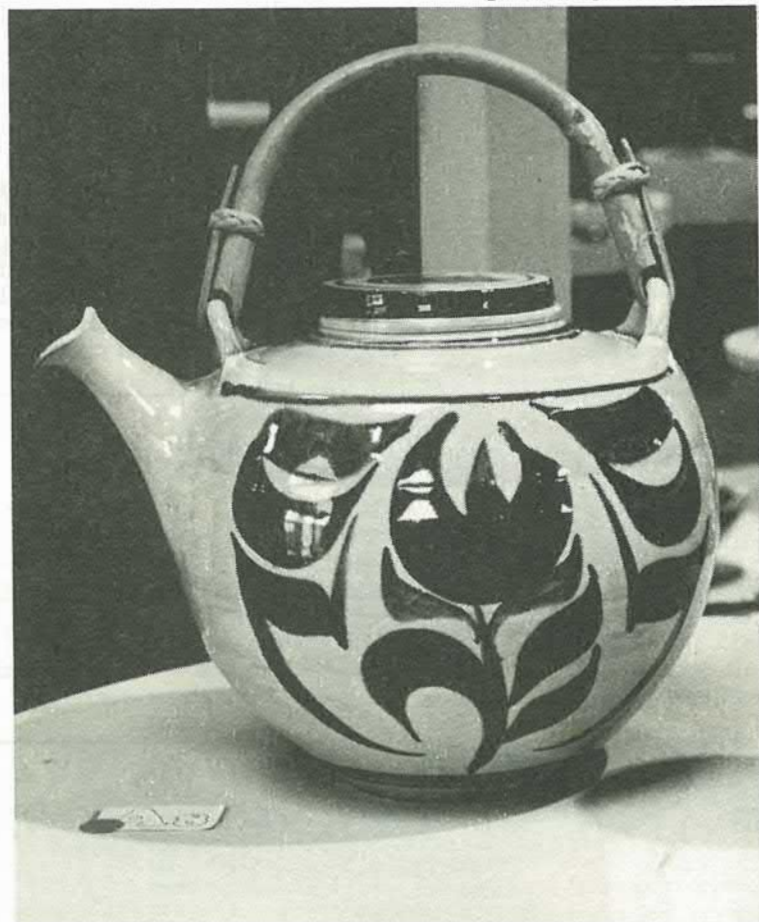
Alan Caiger-Smith makes no apology — nor need he — for his early espousal of the outsider position. His majolica, though traditional in technique, is in detail surprisingly contemporary, for those seductive brush strokes build up patterns that are truly abstracted, deriving not even remotely from any natural forms like frequently plagiarised oriental wind blown reeds and exquisite bamboo, nor the robust heraldic animals of the occident. His designs spring directly from the shapes dictated by, or hinted at, by the brushes themselves.

Herein, and in his willingness to take his decoration further than most of us would do, lies his especial quality. "I know you will think its over decorated but I like it this way." During many of his demonstrations, as sweet swirling lines built on one another to compose the dancing design, I was acutely aware of the held breaths of the other spectators, to be sighingly released when the structure emerged complete. Many would have stopped long before he did, fearing that another line would wreck the design. And yet the carefully considered final strokes did not diminish the whole. They completed it.

He insists that the importance of the spaces left between the strokes and the propriety of their sum complements the shape of the pot. He meticulously ponders ways in which a band or a curve can add to the fullness of the form and never deny it.

A modest man, his self depreciating phrase or gesture belied his deeper assurance, and I for one drew deep satisfaction from his confidence arising

glaze recipes on page 29



from twenty years of dedication to this currently neglected branch of the potter's repertoire.

Christopher Vine

Alan commenced by throwing some basic shapes, large and small, goblets with an indefinable elegance, a handsome teapot, and several pitchers, some generously curved, some severe in form. As he worked, he told us of his workshop at home in England, and their production methods, his apprenticeship system (he has 7 or 8 workers at various stages of ability) and his surprise at the New Zealand one-man workshop system.

The pots were rapidly dried in the sun, and after lunch he turned them. And then came the magic. Using basic oxides, he proceeded to decorate each pot with deft brush strokes, totally suited to the form. He pointed out the need to find the precise spot at which to start and finish a design, for instance, a jug's handle attachment provides a natural accent and indicates the area asking for decoration. He used no measurements, relying entirely on his practised eye, and the result was decoration such as we had never seen before. The three goblets, each of which he decorated in a different fashion, showed us the completely changed appearance of the pots after an alternative approach to design had been carried out. At the end of the day, Alan suggested that we each bring brushes, no matter what kind, to try our hand.

On Sunday morning equipped with various brushes, we were shortly on hands and knees on the verandah in the sun, attempting to emulate on newspaper the free-flowing lines which Alan had demonstrated the day before. Few of us showed much aptitude, but we had fun trying.

After lunch, he dipped some previously biscuited pots in a white majolica glaze, and demonstrated similar decorative techniques over the raw glaze, a much more difficult proposition. He just ground his oxides on a palette, in this case a sheet of glass, with some gum to help the brush flow, and then moistened his brush with water and absorbed the required amount of oxide for each stroke.

He also experimented with some of the more unusual brushes which potters had brought, being particularly taken with a home-made brush of dog's hair.

We were regretful when the weekend school ended. Much had been shown to us that we had never had the opportunity to see before, and Alan's charm captivated us all.

Beverley Luxton.

The art of Edgar Mansfield

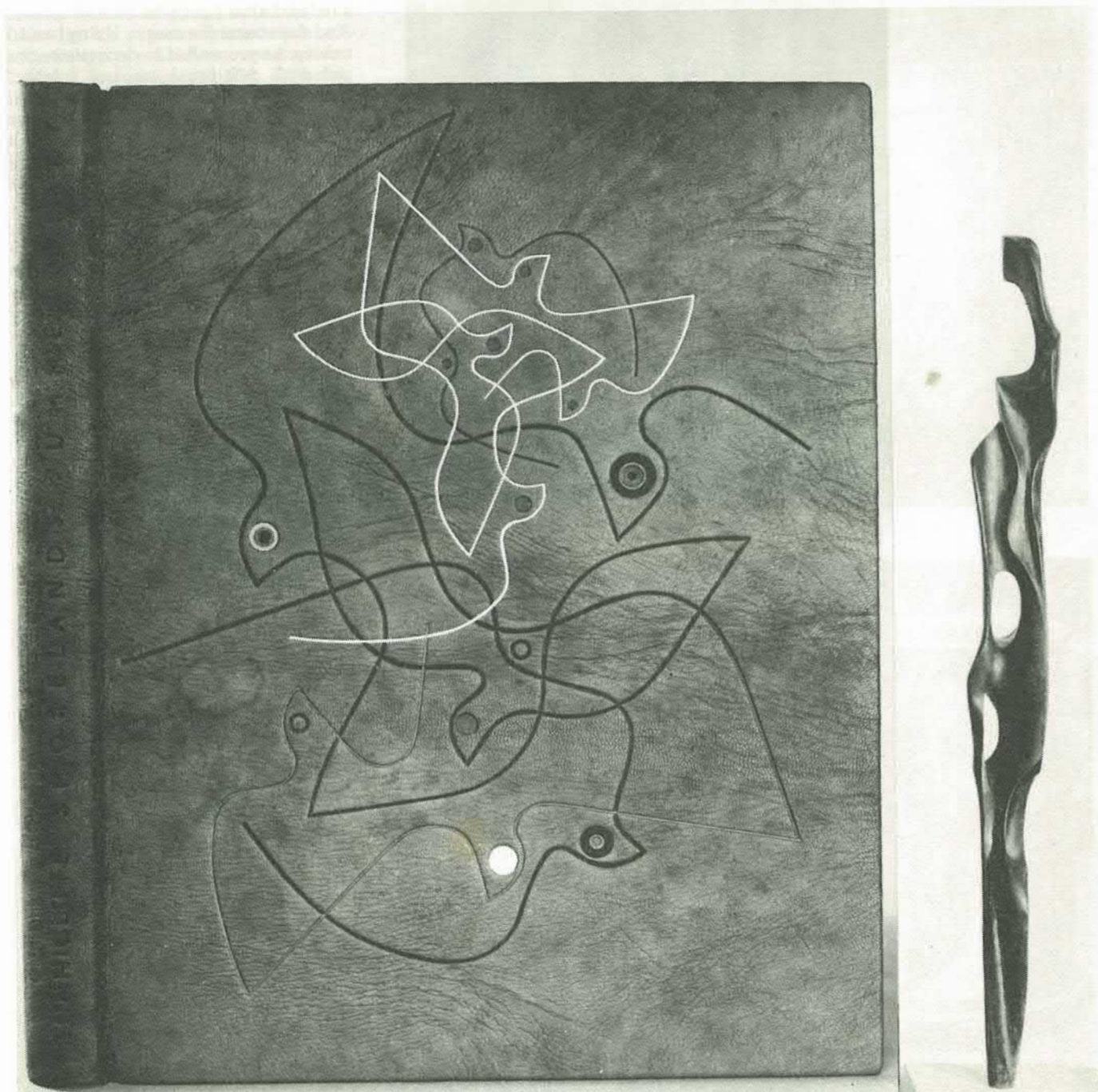
After training as teacher, painter and sculptor, I studied pottery at Dunedin and elsewhere and included kick wheel pottery when teaching art and crafts at Feilding High School and adult day classes in 1929-33. This was probably the first pottery to be taught in a secondary school. In London from

1934 I studied pottery among other crafts for some years and stopped only when bookbinding and again creative art took over completely.

My sculpture could be conceived as an asymmetrical extension with more creative freedom of my feeling for pottery form, and my recent emphasis on

shell-like space hollows are related to pots cut through. I have always been dominated by flexible line and line-edge — surface and space hollows rather than solid volumes.

From purely naturalistic interpretation I changed almost suddenly to abstract in 1929-30 at the same time



as I began serious potting — though this is no co-incidence. My serious work has never been quite abstract. It has always been evocative. The "sleeping giant" on the Havelock hills, the driftwood on the Napier beach and perhaps even Maori sculpture all played some formative part from earliest childhood.

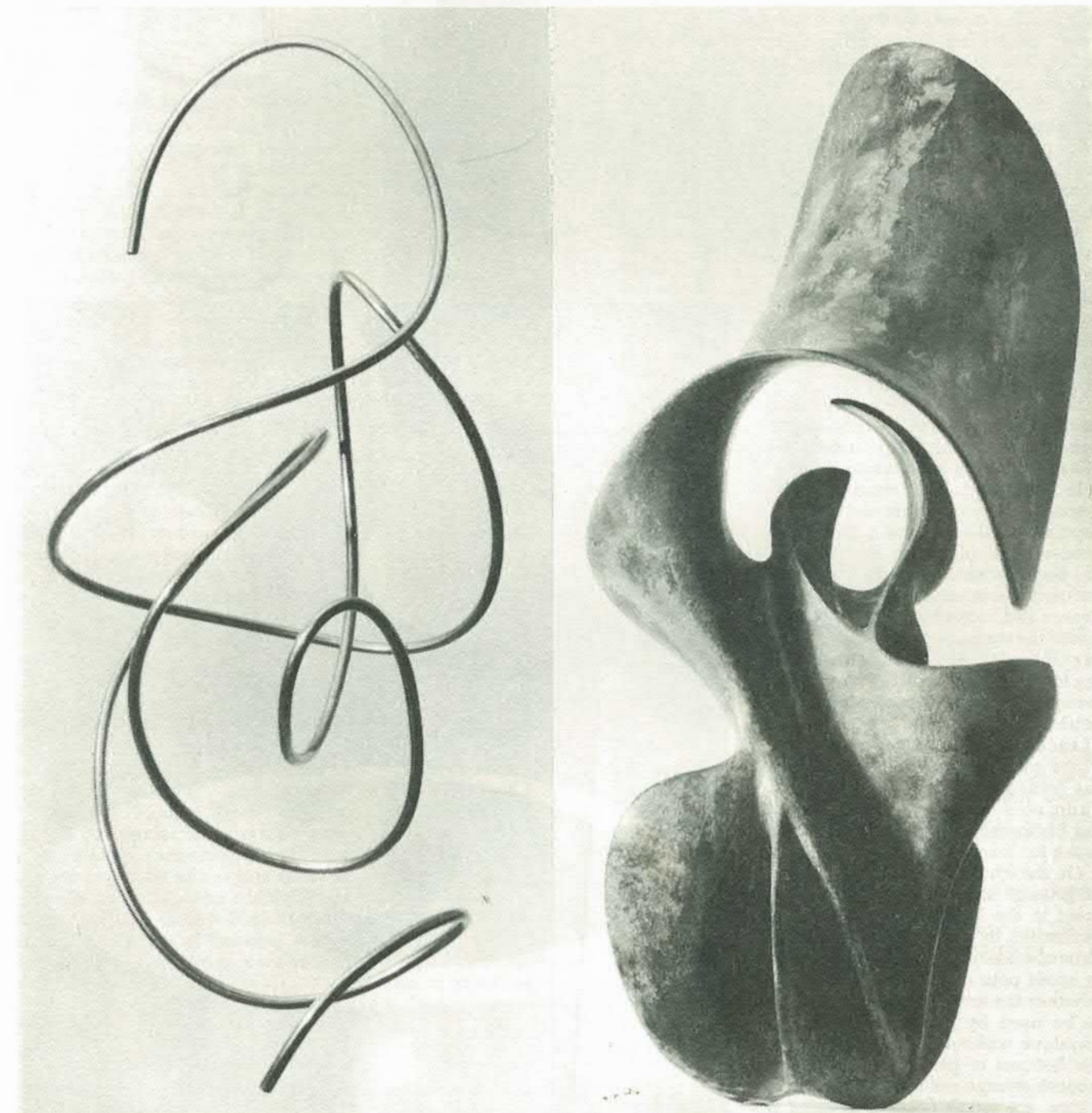
There are multiple aspects to my work — all conscious and deliberate even though sometimes triggered intuitively. Everything is primarily an abstract adventure in form, area, space, line and colour disciplined within the rectangle (painting or bookcover), or the silhouette (sculpture).

The design structure is almost invariably sonata form. (I learnt the violin from early childhood and retain a particular delight in concertos. The dominance of line and sonata form in my work may be a consequence). My paintings or coloured drawings while an end in themselves, are also the probe experiments leading to directions in bookbinding and sculptural form. The contents of the book suggest the design. I then bind the book and execute the design.

Driftwood which suggests life, but never describes, motivates the sculptural forms. They are titled "animism" — from the primitive belief that a

natural inanimate form suggesting a living form must possess some of the spirit of that living object. The sculptures are numbered and cast in bronze in editions of six. After each one is cast the model is worked on again, changing as in evolution, and the second of the six is cast. Each new variation is called a mutation thus, Animism 60 mutation 2 of 6. I am therefore creating an abstract evocation of life and expressing the fundamental life force of mutation. This has never before been expressed in art.

I also grow runner beans, tomatoes and silver beet for my needs and neglect weeds.



Ceramics in Britain today.

Eileen Lewenstein

Potters in the United Kingdom are subject to as many conflicting influences as potters everywhere else in the world, and this tends to make it difficult to discern or trace any major movement or direction in current work. So much is happening and so many influences are assimilated and later abandoned that it is sometimes impossible "to see the wood for the trees". In the last thirty years studio pottery has become more and more popular and practitioners now range from the enthusiastic amateur to the full time professional. A wide spectrum of interests is represented and ranges from those of the maker of traditional domestic wares to the make of objects and the sculptor.

New work is being done in all areas. Each year the art school diploma shows reveal a wealth of imaginative talent (there are forty colleges offering degree courses in ceramics) but often this seems to disappear without a trace: only a few continue their interest in and practice of the craft.

Broadly speaking there are three main areas of interest — firstly, useful domestic wares; secondly, individual pieces and lastly objects/sculpture.

In recent years hand made domestic wares have become more and more acceptable to the general public. The predominant influence in this field has been Bernard Leach and the most influential teachers have been Michael Casson and Victor Margrie, who established the studio pottery course at Harrow School of Art. Most potters settling for repetition throwing have opted for reduction fired stoneware. One could almost say there is a "Leach/Harrow" brand of pottery. There are however signs that some of the younger potters, such as Paul Philp, are looking to the early days of the Staffordshire potteries rather than Japan for inspiration.

On the whole this has been a period of general improvement and refinement in the handling of materials; a realization by potters that such mundane considerations as whether the lip or spout pour well without dripping, whether the articles are light enough to be used by a person of normal physique without strain and whether the bottoms of pieces are stable and smooth enough not to scratch the furniture, are worth bearing in mind if



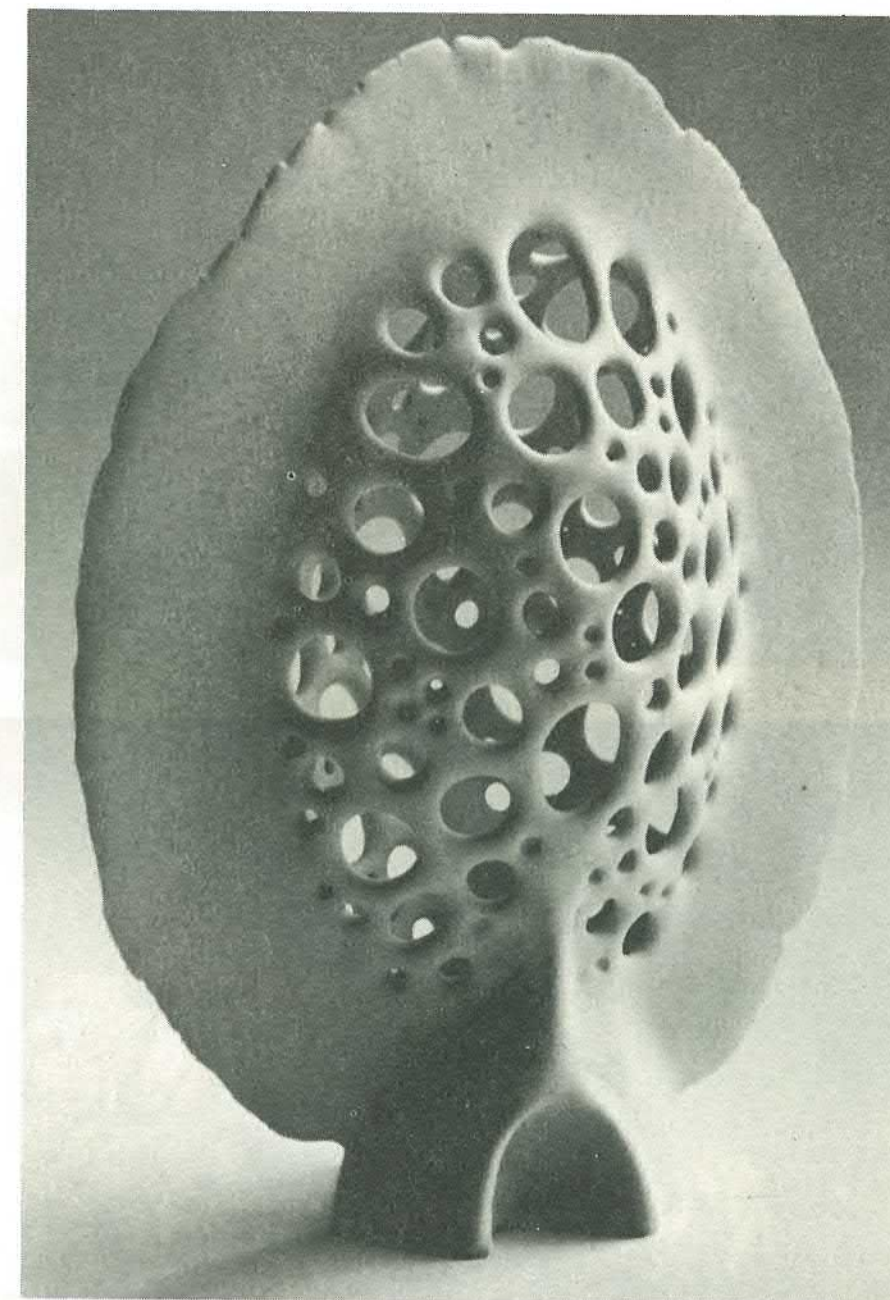
pottery making is to be a means of livelihood.

However since 1970 the most interesting developments seem to have been within the sphere of the "individual piece". Often this has been due to the inventive exploration of some currently neglected technique; potters have been ready to explore the extraordinary wide range of making methods in order to find the one most suitable for expressing their ideas. Some potters, of whom Mary Rogers is a notable example, have found nature a useful source book of form and pattern and have adapted and developed corresponding techniques. Mary Rogers has pinched porcelain with sensitivity and delicacy, whilst other potters such as Sheila Fournier and Emmanuel Cooper have produced equally subtle forms by throwing and handbuilding.

Eileen Nisbet has used the translucency of porcelain to enhance her slab built pieces, whilst Jacqueline Poncelet, who studied at the Royal College of Art, has discovered and exploited the translucency of bone china by slip casting simple forms which soften and gently distort in the firing. Elizabeth Fritsch, also from the R.C.A., possesses an original talent and her unglazed coiled pots are painted with precise and sometimes intricate patterns in coloured slips. Colin Pearson has continued to combine successfully throwing and slabbing with his now famous "winged" pots and some of the most recent porcelain examples have had beautifully reduced glazes. In these last few years, not only have making methods been explored and in some cases re-invented, but great interest and ingenuity has been shown in formulating new bodies and glazes suitable for a whole range of firing procedures from raku to porcelain.

The area of the ceramic object/sculpture is perhaps the most difficult to assess. Much good and interesting work has been produced, some of which might be classified as "decorative objects" and some as "sculpture". Houses, boats, bridges, people, animals, countryside and, most recently, furniture have all been the starting point of a whole series of ceramic fantasies. John Maltby finds his inspiration in the English landscape and chests of drawers, whilst Tessa Fuchs finds hers in town houses and Fresian cows.

Graham Burr, Gordon Baldwin and Mo Jupp are just three of the potters whose most recent work suggests a move towards sculpture away from the decorative object; all three use traditional hand based pot making tech-



niques. Glenys Barton, on the other hand, uses slip cast bone china for her precise geometrically based objects.

Many of the potters mentioned, including myself, work in more than one of the areas indicated earlier. Colin Pearson and John Maltby, for instance, produce a wide range of domestic wares.

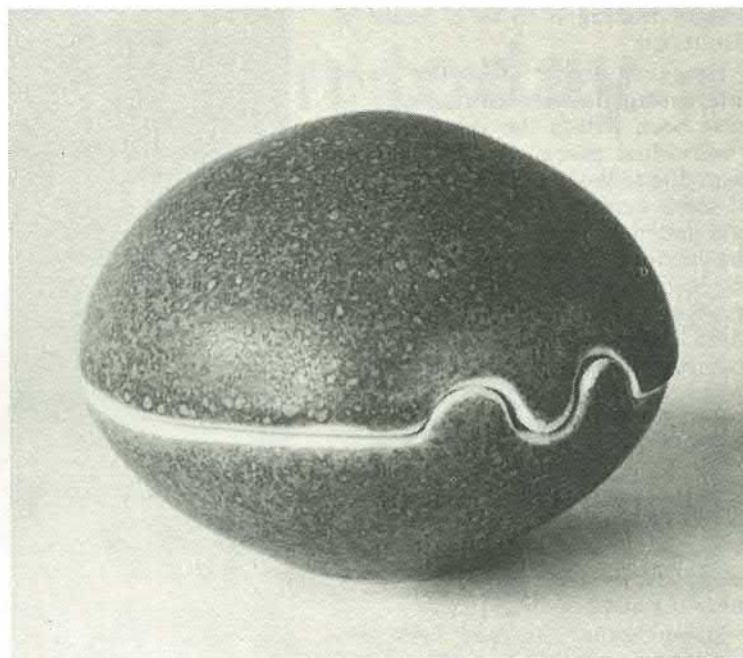
This necessarily brief survey includes only a few of the many talented potters now working in the U.K. These last few years have seen much exploration of ideas and techniques, and this is leading to a general broadening of the terms of reference within which potters are prepared to work.

Eileen Lewenstein is co-editor of "Ceramic Review".

Above: Mary Rogers, pierced form porcelain

Opposite page: Elizabeth Fritsch, coiled stoneware, Sheila Fournier — thrown porcelain, photos, Eileen Lewenstein. Eileen Nisbet porcelain dish (1250°C) matt transparent glaze over dark grey slip decoration and unglazed rim.

Over the page: John Maltby, salt glazed stoneware
Eileen Lewenstein, lidded box and Tessa Fuchs, cows and tree — earthenware
photo: Ronald E. Brown



Domestic pottery in England

Margaret Harris

To the visitor from New Zealand, Britain the nation of shopkeepers has few craft shops. Nor is there a noticeable evidence of potters. The average person does not know what is meant by the term pottery and assumes it means Poole or Denby ware. In England it's unusual to meet a housewife who has attended pottery class. In New Zealand nearly everyone knows someone who has.

The lack of public acceptance of handmade pottery through long exposure to manufactured wares since the industrial revolution, has resulted in British potters' wares having a high standard of finish — thin walls, smooth glazes — to attract buyers used to machine made articles. Not until there is a public, aware of the pleasures of the handmade pot can the more exuberant type of pot as we know it be a readily acceptable household item.

Rugged, ashamedly hand crafted articles are probably the natural outcome of our rocky, mountainous background. By comparison then, from the glaciated, smooth and trim English countryside can we expect the fine and smooth English pot? Whether or not the refined pottery is a reflection of background, it is easier for British buyers to accept.

What happened to the robust English slipware tradition?

The link between 20th century pottery and the old English tradition rests with Michael Cardew whom we visited at Wenford Bridge in Cornwall. The last English handcraft pottery to let its kiln go out was at Winchcombe in Gloucestershire in 1914 — its death knoll sounded by years of increasing competition from machine made china. The final blow was the wartime shortage of coal for firing. Michael Cardew was already an admirer of pottery made in the countryside in the same manner as it had been made since the middle ages. "It was an English trade par excellence. An Anglo Saxon way of being practical. Pottery is essentially practical." As a boy he'd often watched W.B. Fishley turning out jugs and dishes for the Devonshire dairy farmers. He saw the opportunity of reviving the tradition when he took over Winchcombe Pottery in 1926 and got it going again. In the village he found and employed one of the men who'd worked there 12 years before.

The earthenware jugs and platters of Michael Cardew's Winchcombe period display all the traditional

strength and vigour in form and decoration. And the same can be said of Michael Cardew's later stoneware as well. His pots in the British Craftsmen's Potters Shop in London at an exhibition last summer stood out in their vitality.

Styles have not changed much at Winchcombe today. Ray Finch, who bought the pottery from Cardew after the war, told us, "Michael developed a vigorous and distinctive style. Having trained with him I wanted to build on what he'd started rather than change. Even the pots we make now, so many years later, are of the same family. They have developed but are related in the same tradition. The origin of the

We observed both in England and America, that of the two approaches to making pots, i.e. the traditional craftsmen's approach evolving out of users' needs as practiced at Winchcombe, and the designer approach of those making individual items for purposes of their own creation when even domestic ware may be designed to be put on a shelf and admired, this latter approach seems to be on the increase encouraged by critics who acclaim new developments.

One can argue against this, but the fact remains that the best potters have learnt their craft in the workshops as apprentices. The few good potters we came across who had art school/design



a Winchcombe casserole

Winchcombe jug can be traced back to the Devonshire cream pitcher." The showroom at Winchcombe has this lively domestic ware available at very moderate prices.

There are other English potters whose work is in tune with the English country tradition. Katherine Pleydell-Bouverie at Kilmington in Wiltshire and Richard Batterham in Dorset are among those we visited.

Ray Finch employs a number of local men. (In addition to his son and currently Nina Davis.) The locals have no formal artistic training. They just learn as they go along, getting experience through practice and repetition of the same skills.

training told us they found this a disadvantage, and after becoming apprenticed to a potter they needed their artist attitudes drummed out of them. The difference is not just one of semantics, but is fundamental and should be understood by potters.

In New Zealand pottery is still mainly designed for use. The self-conscious artist approach is more rare because of the sometimes lamented lack of art school training in ceramics. Most great works of art have evolved through a workmanlike response to the needs of the people of their time, so perhaps the lack of art school courses will prove a blessing to the potters of New Zealand.



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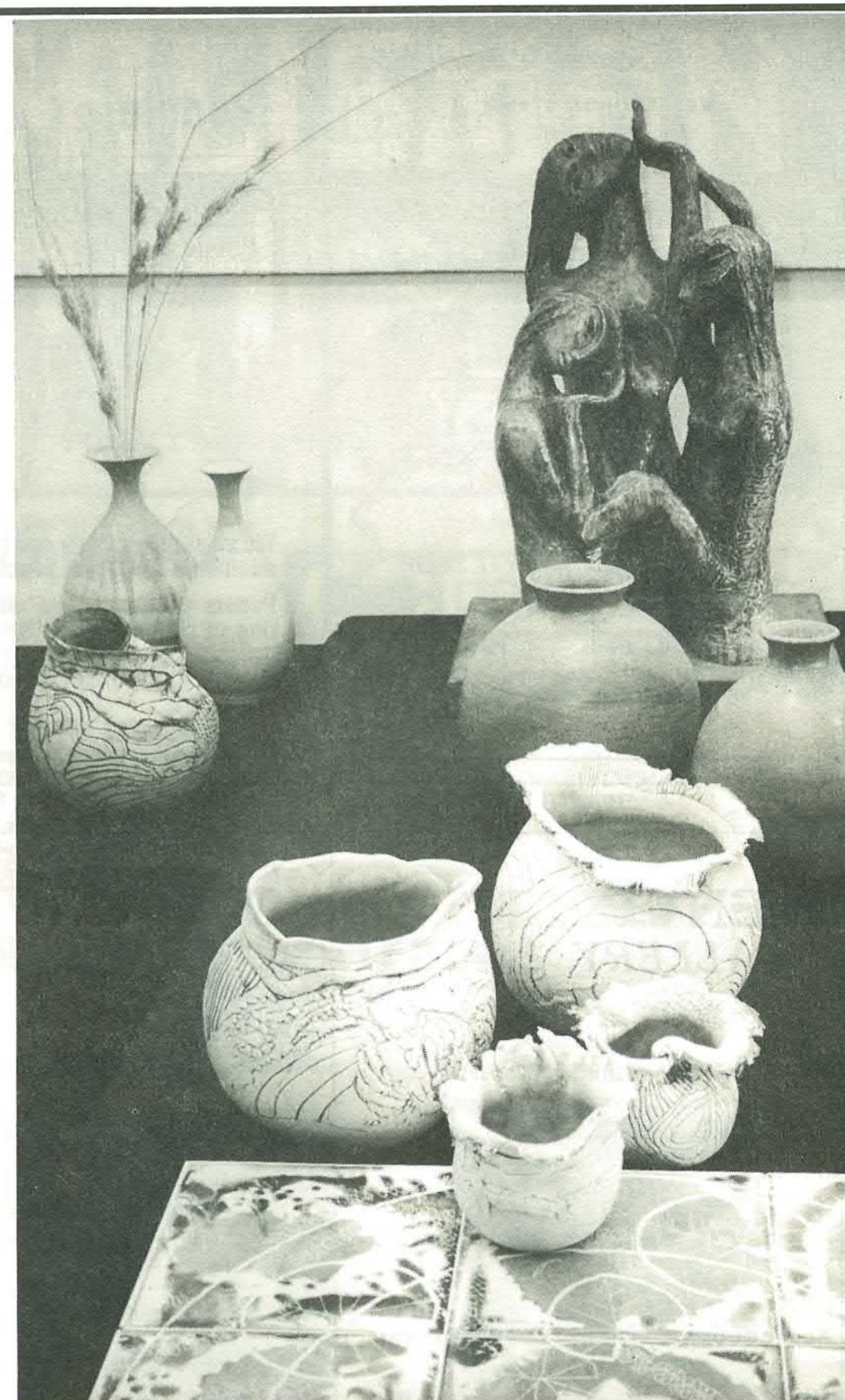
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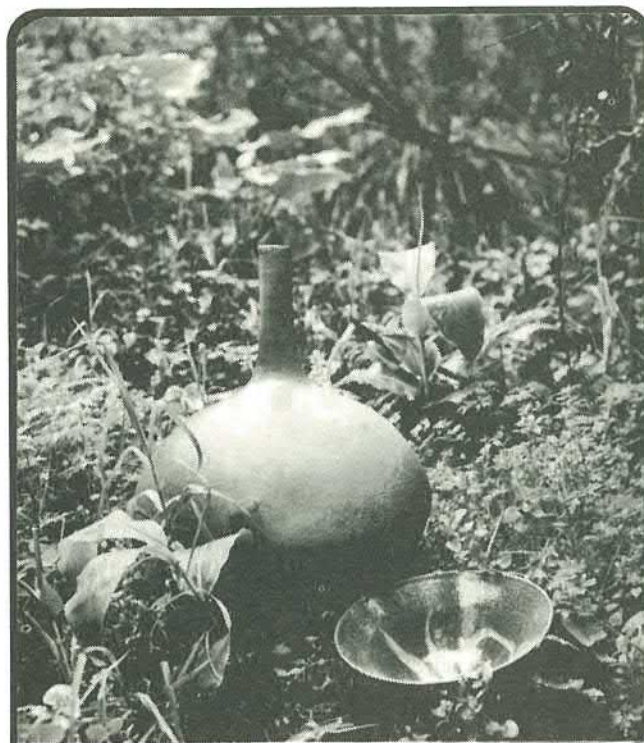


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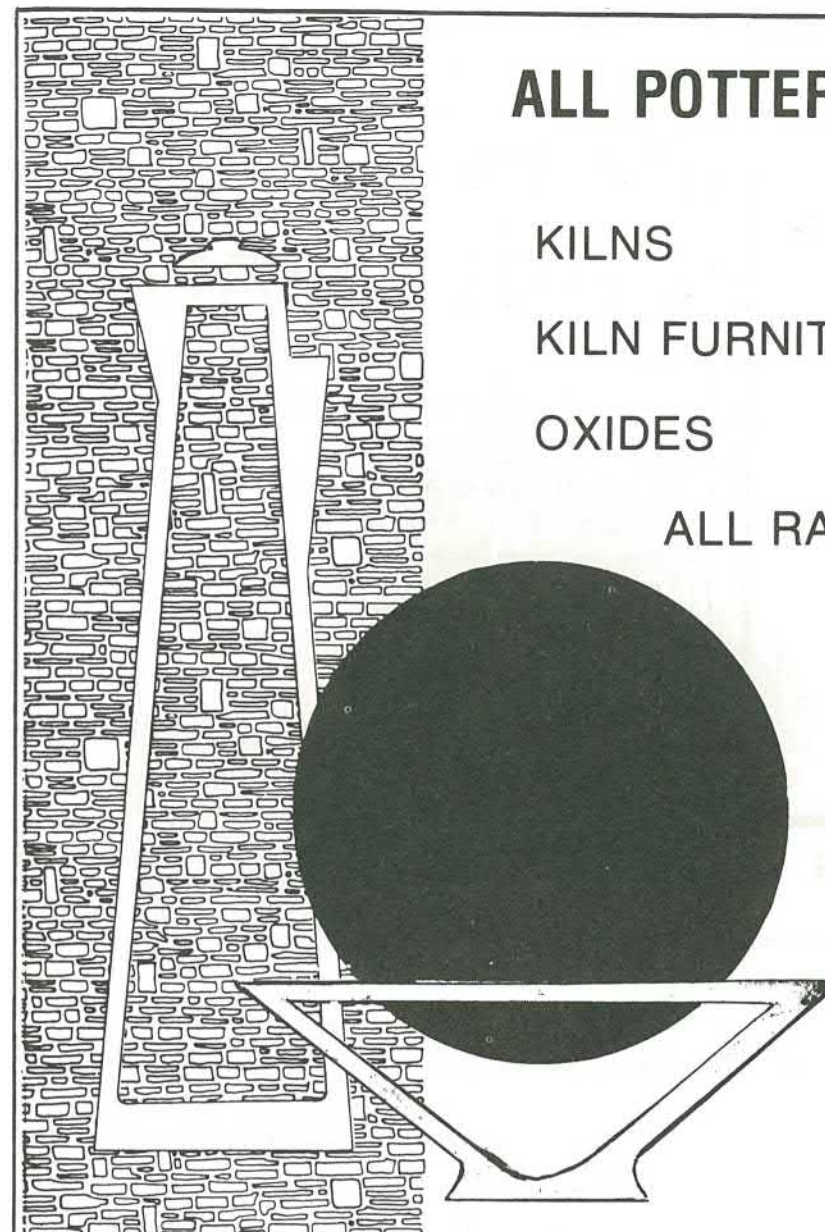
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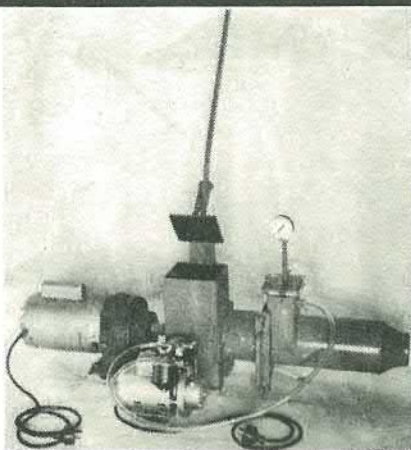
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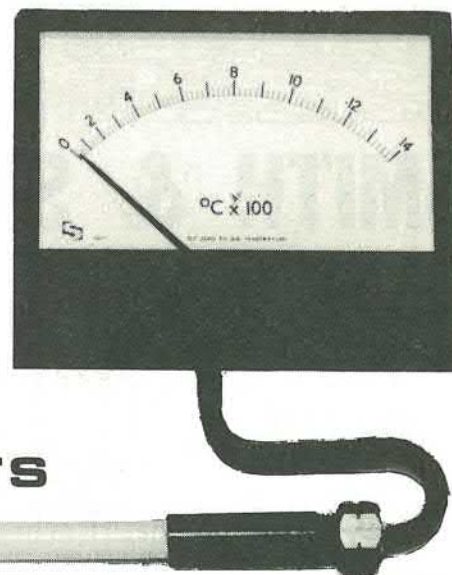
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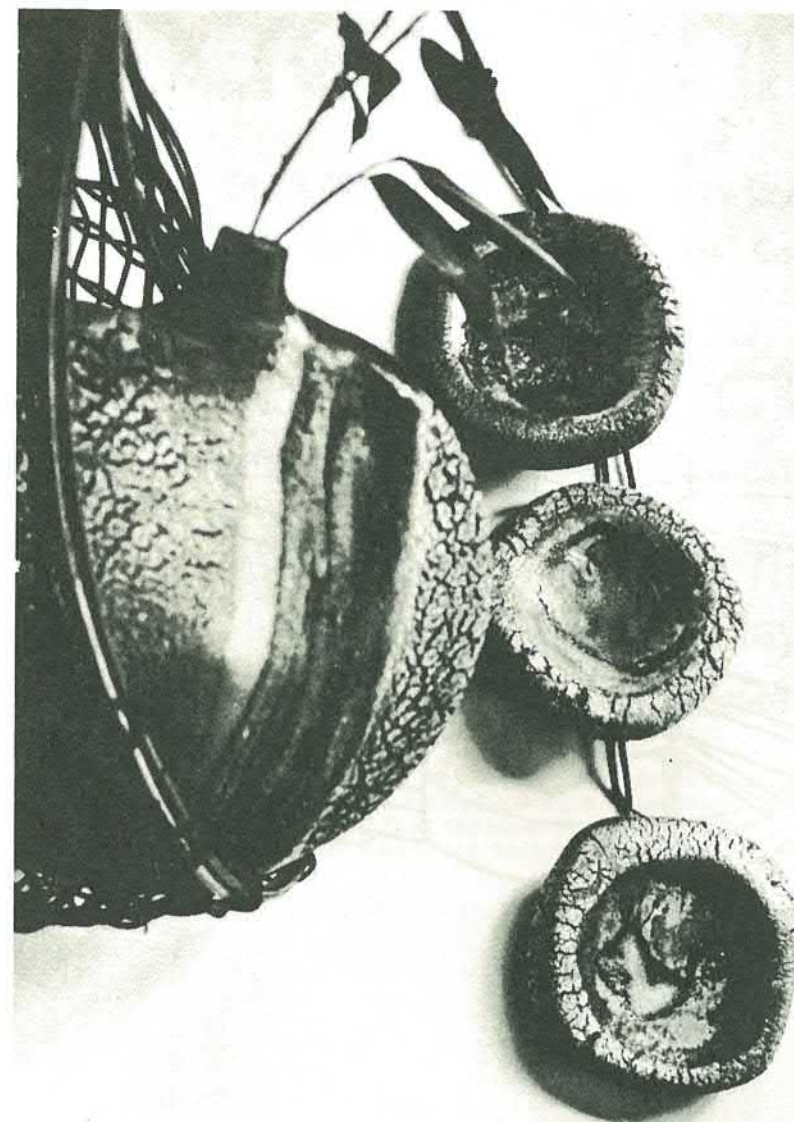
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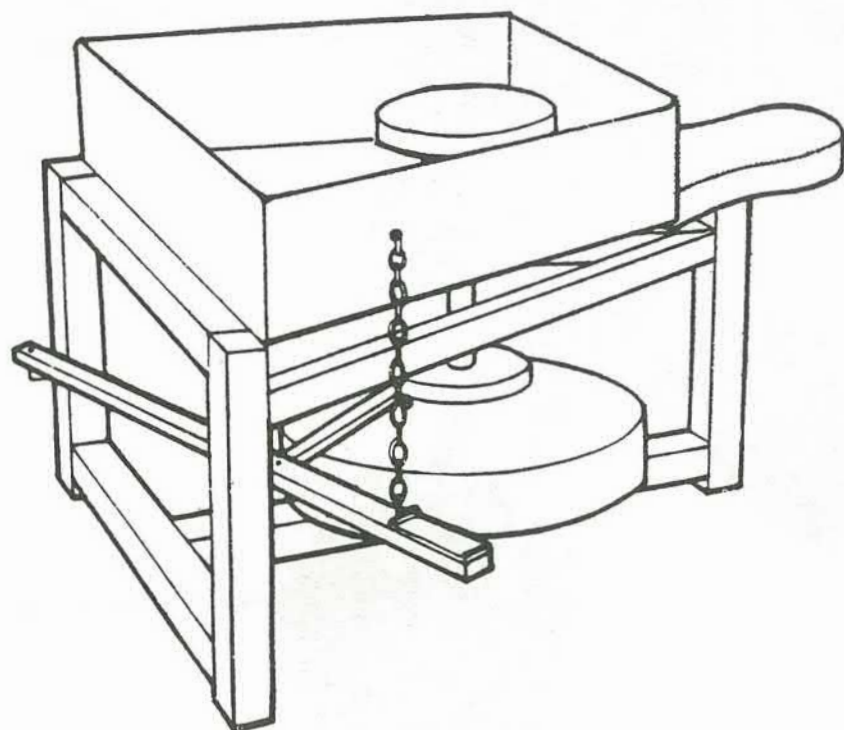
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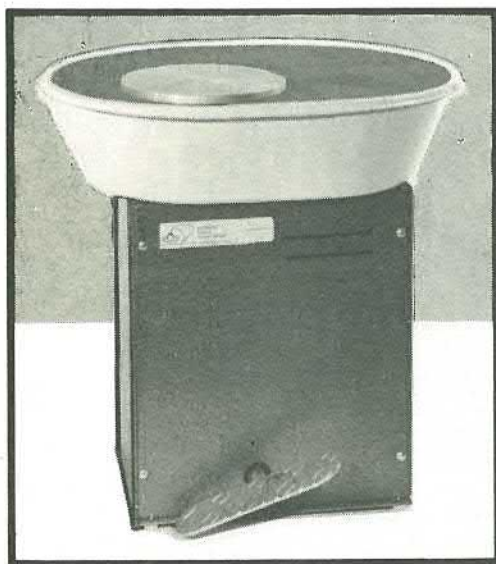
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