

Leisure Magazine of the United Kingdom Atomic Energy Research Group and Associated Organisations

3p

Harlequin

MARCH 1976



**In this
issue**

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SHOULD BRITAIN FEED ITSELF — HARWELL ART — FROM MURPHY TO MASERATI
AERE DRAMATIC SOCIETY'S "UNDER MILKWOOD" — CRUISING, ETC.

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COVER PICTURE

IN THE GREAT WINDS OF THE NEW YEAR SHEETS WERE RIPPED OFF THE FACE OF HARWELL'S TANDEM GENERATOR AND REQUIRED IMMEDIATE FIRST AID AS RIVETS HAD PULLED THROUGH WHICH CONNECTED THE INTERIOR. THIS WAS A NIGHT-TIME JOB FOR HARWELL'S FIRE BRIGADE, WHO ON 'SPECIAL SERVICE CALL' SECURED THE INNER FACE PANELS.

TODAY THERE ARE SIGNS, MORE WELCOME, THAT SPRING IS ON THE WAY.

*l. to r. Rosemary Wyatt, Anne Lloyd,
Lynn Moran.*

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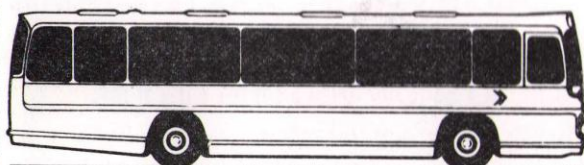


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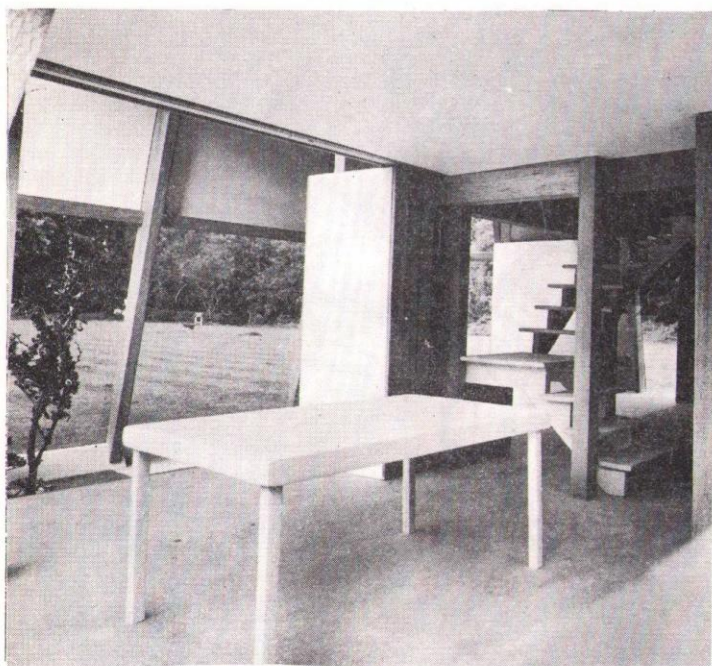
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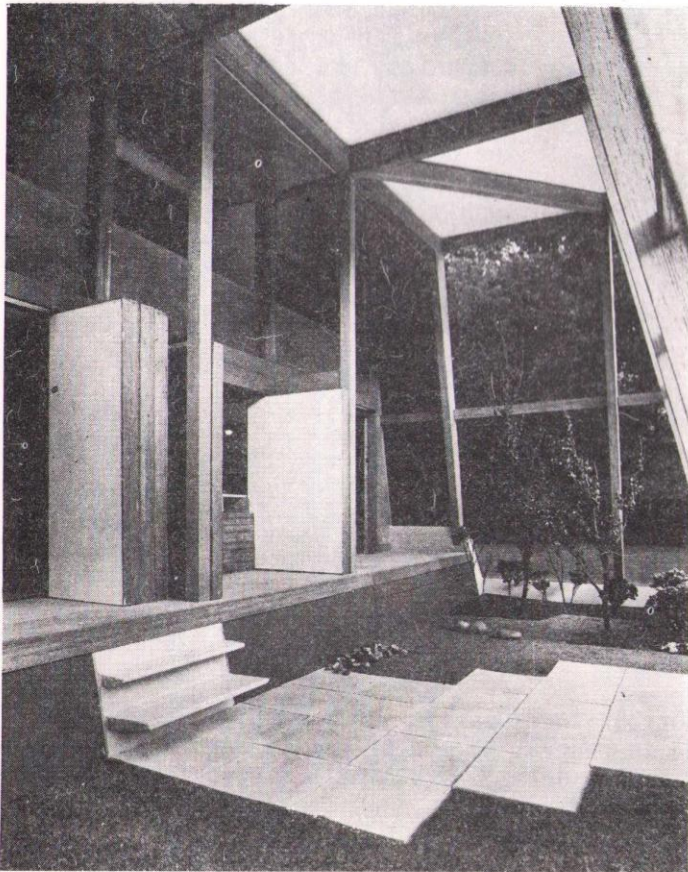


The house of the future ? —



View from the kitchen/dining area, with insulating screens open, overlooking the enclosed and outdoor garden areas

The enclosed garden space which can be used for a large proportion of the year as a leisure area, for children's play or for vegetable cultivation. In fine weather the living areas on the ground floor open onto a terrace and the hinged insulating screens to the first floor bedrooms can be raised so that they overlook the garden area



The "autonomous house" project which is sponsored by an SRC grant of £30 000 and a Department of the Environment grant of £6000 is being undertaken by Alexander Pike and his team at the Department of Architecture, University of Cambridge. The concept of an "autonomous house", freed completely from connections to centralised services, seeks to contribute solutions to some of the problems facing us today—depletion of energy, materials, food and water resources, pollution and urban growth.

Our consumption of resources is increasing at a very rapid rate, particularly in terms of energy, both directly for domestic use and indirectly in the production of consumer goods. Yet the more easily won sources of energy are fast disappearing as each newly-found supply of fossil fuel is voraciously consumed by the demands of the affluent society. As resources become scarce so prices rise, and it has been estimated that the price of oil, gas and electricity may rise by about 15 per cent per annum over the next ten years, quadrupling present rates.

In this climate of shortages, the costs and losses in distributing services such as electricity, gas, water and sewage disposal are receiving much greater attention. The economic viability of services networks has become questionable and their serious influence on the pattern of city growth has also to be considered. Cities throughout the world are expanding at an alarming rate and it has been estimated that by the year 1984 more than half the world's population will be living in cities—aggravating transportation problems, pollution, land values, crime rates and other social disorders. The impending levelling of standards of living will, for many people mean an intolerably different life-style unless we plan for measures which increase self-sufficiency and self-determination.

Sufficient work has now been undertaken on the "autonomous house" project to show that it is theoretically possible to create a house independent of central power, water and food services, and the next stage will be to construct a prototype.

The house will exploit the abundant and ubiquitous sources of energy: solar and wind power. Space heating will be provided by using collectors for solar radiation, storing the heat obtained during the summer for use throughout the winter, boosted by the periods of winter sun. Wind power will be utilised for generating electricity with the surplus energy above the capacity of the generator diverted to provide domestic hot water. Recycling will be employed to the maximum extent. Rainwater will be collected from roof surfaces for use and, whenever possible re-used. Human waste and kitchen and green garden waste will be fed into a sewage digester to produce methane for cooking purposes. The innocuous sludge from the digester will have a high value as fertiliser.

The objective is not to create a house which satisfies the bare needs for survival but to provide the level of amenity currently enjoyed by most householders. To achieve this the limited level of supply must be matched by a reduction in demand. This will be done not by restrictions on a way of life but by high standards of insulation, reduction of ventilation losses and by redesigning domestic equipment to avoid wastage.

The results of the work will be applicable not only to autonomously serviced houses but also for the entire stock of housing, in which very significant savings could be made in energy consumption.



The Sinodun Players intend to buy the Corn Exchange, Wallingford, situated in a prime position in the Market Place, and to convert it into club premises and theatre. The auditorium will have a seating capacity of 140-210 and there will be a conference room, lounge and bar.

The building features a typical Victorian facade, and an attractive and rare cast-iron ribbed-arch structure, in the style of Brunel, supporting a glass roof.

The building was erected in 1856 and as the name implies was built for local farmers to meet in and exchange their corn. It only ceased to function as a corn exchange at the outbreak of the Second World War. For approximately 25 years it housed the Ministry of Pensions and National Insurance and was also the Food Rationing Office. For the past five years it has been derelict.

HOW YOU CAN HELP

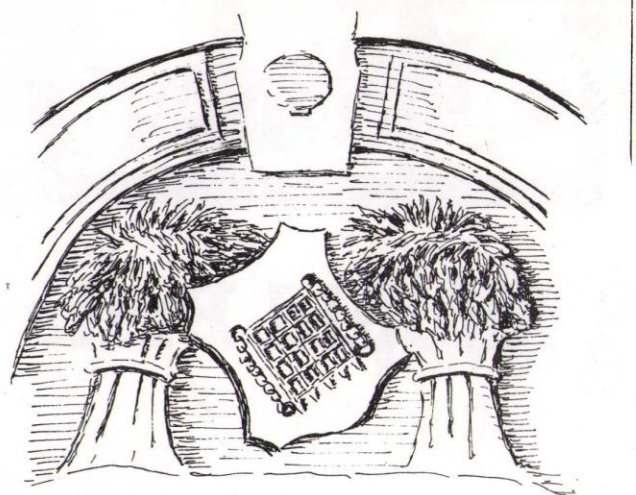
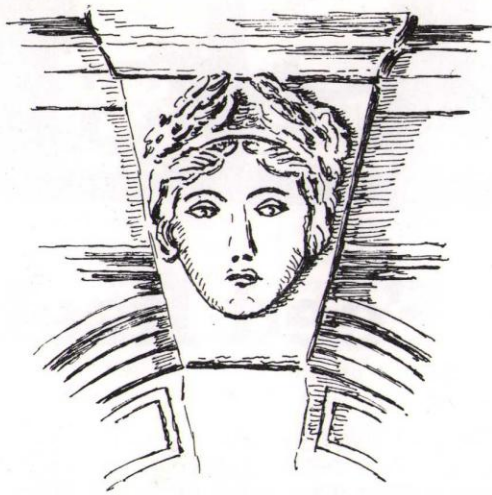
Direct labour, contributions for specific items: individuals may like to become involved in renovating one of Wallingford's historic buildings by helping with the actual work, under professional supervision, or making specific contributions like donating a seat, decorating a room, etc,etc.

This will provide a home for the Sinodun Players and enable them to expand their programme of live theatre, serving a catchment population of 20,000 people. It will provide an attractive venue for amateur and professional touring companies, and facilities for many other activities.

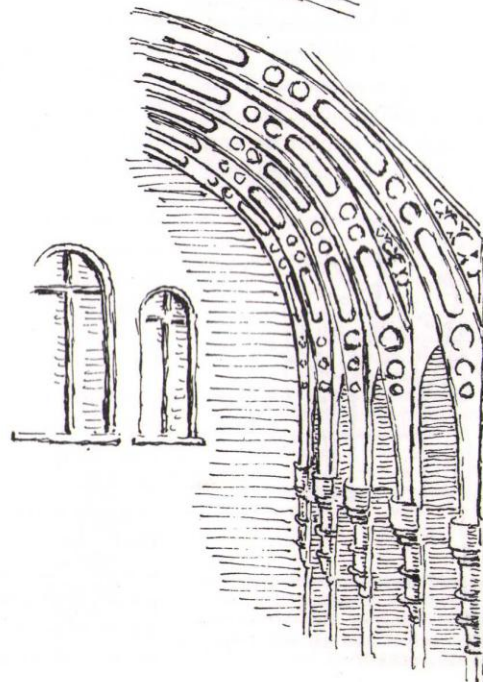
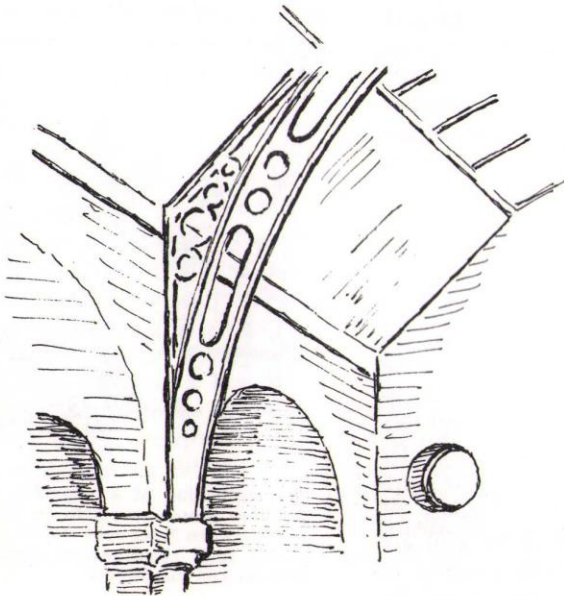
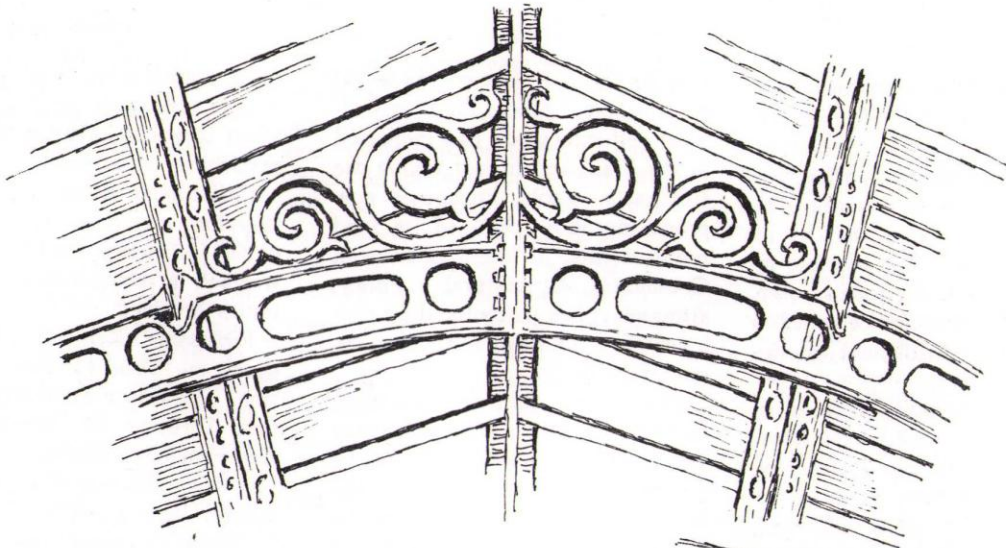
The proposal can thus be seen as reviving an historic building, supplying a home for an established amateur dramatic society and providing more live theatre and entertainments in the old town centre. It will give the town its largest public meeting hall.

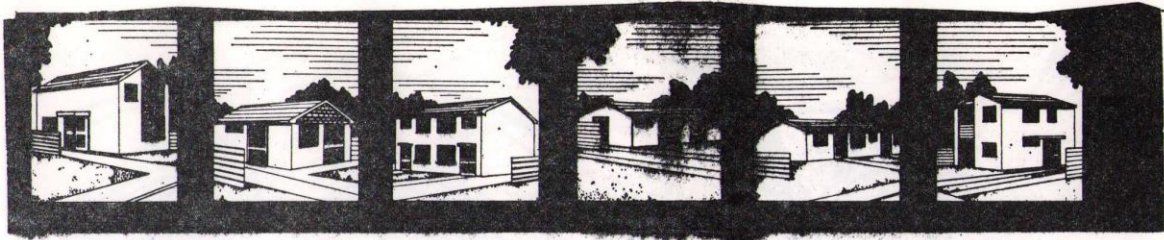
ENQUIRIES

Offers of help in reconstruction:	Dennis Wood Ext. 4770
Information / Donations:	John Warburton Ext. 4898
Sinodun Players productions:	Patrick Williams Ext. 2533



SKETCHES OF WALLINGFORD CORN EXCHANGE BY RAY GAYLER, CHEM. ENG.





Should Britain Feed Itself?

A one-day conference at Reading University was organised by the Conservation Society and the United Kingdom and Ireland Agricultural Students' Association. It examined the question of whether it is possible for Britain to live off its own resources, and, if possible, whether it would be desirable.

Three hundred tomatoes, six very thin carrots and two lettuces half-eaten by slugs — this, said Christopher Ritson, was what his garden produced this year. He was making the point that as in the same way it is not possible to be self-sufficient in one's own garden, so it might not be sensible to try to be self-sufficient in one country.

Christopher Ritson, lecturer in Agricultural Economics and Management at Reading University, gave the introductory paper of the conference. He gave a broad, though necessarily brief, review of the issues involved in being self-sufficient. There was, he said, no merit in self-sufficiency for its own sake, and the impact of any policy had to be considered not

only on the U.K. but on the world as a whole. Since 1960 agricultural self-sufficiency has increased in the U.K., and in fact taking the EEC as a whole, Europe is now producing about 90% of its food requirements. The European Common Agricultural Policy, although it has its faults, does give a certain amount of security in an uncertain world.

One aspect that is sometimes ignored in the self-sufficiency argument is that while it might be possible for Britain to produce the food it requires, it would still be dependent on the rest of the world for providing the necessary feed-stuffs and fertilisers, etc. The balance of payments argument (that not importing so many food-stuffs would improve our balance of payments position), Christopher Ritson considered to be rather weak — it hinged on so many uncertain factors such as world markets. There was also the question of what effect Britain's self-sufficiency would have on world poverty. Although in theory it might appear that if we imported less food there would be more available for the third world, in practice it might not work out like that: for example, it is perfectly possible for the U.K. to grow more sugar beet and so cut down on sugar imports, but those who are most concerned with poverty in developing nations have been the

most vigorous opponents of such a policy because of the adverse effect it would have on the sugar-producing countries.

Christopher Ritson's conclusion therefore was that the advantages of self-sufficiency must be carefully weighed in relation to all the other issues involved.

Professor Kenneth Mellanby spoke on 'Food for Fun or Nutrition.' Professor Mellanby was the first Director of Monks Wood Experimental Station and has recently published the book 'Can Britain Feed Itself?'. In his talk he made the surprising statement that the people of Britain could be fed quite adequately nutritionally on 5p per head a day—but only if the diet consisted of an unappetising sort of porridge made from



Should we feed three-quarters of a ton of cereal a year to livestock for each head of population, or should we eat more of it ourselves and eat less meat? There is no easy answer.



The cultivation of a vegetable garden has once more come into its own and now between 5 per cent and 10 per cent of our food requirements come from gardens and allotments.

poultry food. The present generation however had grown accustomed to eating well with a great deal of variety in its diet, and Professor Mellanby was convinced that although it was quite feasible for Britain to grow sufficient food for its population, this would only be done if the economic situation became so dire that we were unable to export manufactured goods to pay for our imports. We are relying on making a profit from North Sea oil, but Professor Mellanby was unconvinced that this would be the case.

Professor Mellanby concluded that Britain could feed itself if it wished by cutting back on meat and poultry production and eating instead the cereal now used to feed animals. Intensive animal feeding wastes between 90-95% of feed-stuffs, and he felt that it was immoral that the developed countries should live to eat while two-thirds of the world eat to live.

The afternoon session opened with a very practical talk from John Cossins, Vice-President of the National Farmers Union, who farms over 1,000 acres near Blandford in Dorset. His theme was 'More Food from our Farms' and he began by stressing the pressures on agricultural land at the present time, the biggest threat being from urban development. Over the last ten years the total land lost to agriculture in England and Wales ran at an average of 65,000 acres a year, and this loss is rising year by year. Despite this the amount of home-produced food has increased over recent years. We live in an interdependent world and therefore it is sensible to concentrate production in the most suitable places. Nevertheless, if British agriculture received help and support from the Government in the context of a properly thought-out long-term policy, Mr. Cossins believed that a real expansion could take place in farm production which would go a long way towards making Britain self-sufficient.

The final talk was given by

Professor Sir Joseph Hutchinson, Emeritus Professor of Agriculture at Cambridge. He stressed that there is still argument about the extent of the food crisis, and whether it is due to temporary climatic disturbances or whether there is a permanent trend towards a world shortage of food. He quoted the case of cereals: in 1938 exporters of cereals included North America, Latin America, USSR, Eastern Europe, Australia and to a small extent Africa and Asia, while Britain was one of the few big importers; at the present time nearly all these countries have become importers of cereal, leaving North America as the only major exporter with Australia now a minor one. He contrasted the eating habits of the third world and the developed countries: in India one person eats 450 lbs. of cereal a year; in the USA one person eats 250 lbs. of cereal a year, while one ton is fed to livestock; in Britain one person eats 300 lbs. of cereal a year while three-quarters of a ton is fed to livestock. British farming is already one of the most efficient and productive in Sir Joseph's view, but he thought more could be done to reduce our reliance on fertilisers from overseas by better utilisation of animal manure and by developing the biological fixation of fertilisers. Sir Joseph ended by saying that it was important that we make up our minds now about what we ought to do as any change in agricultural policy would take about five years to implement.

The Chairman of the Conference was Dr. John Loraine, Vice-Chairman of the Conservation Society and author of 'The Death of Tomorrow,' and he directed the discussion that followed each paper. A wide cross-section of people attended the conference and it was obvious that they had thought deeply about the problems facing not only the U.K. in feeding its population but of world problems as well.

WHAT TO DO IN THE GARDEN

MARCH IS A VERY BUSY MONTH

The middle of March or thereabouts, has been the traditional time for pruning roses for longer than most of us care to remember. Some extra-tidy-minded gardeners like to get them at least partially done in the winter, but even they will be taking another look round in the second half of this month, to cut again if there has been any winter die-back.

Dahlia tubers can be brought out of store now, and stood on the warm greenhouse staging. Spray them over with water 2 or 3 times a day for a week to plump them up, then set them half buried in boxes of moist peat.

This will start them shooting, and at planting time in May, they can be divided up if more stock is wanted, making sure there is a shoot or shoots on each piece.

March is the big seed sowing month for vegetables. Onions like a nice fine bed to get good germination, and the patch should be trodden over when dry, and raked well down. The rows go 15 inches apart for a bed of keeping onions, and it is better to sow more seed separately for salad onions, rather than rely on thinnings from the main bed. Parsnips also go at 18 inches, broad beans at two feet, and early carrots, lettuce and radishes at one foot. Peas go at the same distance apart as they are going to grow high.

Broccoli both heading and sprouting are better a bit later in the second half of April. Leeks are a good winter vegetable to have, and again it pays to have your own plants. They must be sown now to give strong plants for setting out in June or July.

A row of an early variety of potatoes is worth risking in March, setting in a slightly sheltered place if possible, and putting each tuber on top of a handful or so of Fisons Super Manure. All seed potatoes must be taken out of bags and boxes as soon as received, and laid out singularly in a tray. This also applies to onion sets and shallots if they have to wait for planting. If lettuce plants have been raised inside, or some are bought, they can be set out under cloches whatever the weather, but in the open it is best to wait until at least the second half of the month.

Sweet pea plants are tougher than they look, and if they are well hardened they can be set out at any time, placing some twigs round them for support.

Precautions must be taken with everything against slugs. Early sowings and plantings are precious, and this opportunity to gain time, occurs only once. A stray slug or two can ruin everything, so scatter slug pellets around as a matter of routine. Do not wait for the damage to start, by then it will be too late. Slugs play havoc too with tulips coming through about now although they never seem attracted to daffodils.

These are the last few weeks for planting bare rooted trees and shrubs, and any put in as late as this will need extra peat round the roots to ensure an easy start for them. They will also almost certainly need water in the Spring and early Summer.

FROM MURPHY TO MASERATI

— OR HOW THE ONCE HUMBLE POTATO MIGHT HAVE BEEN THE ANSWER TO OUR TRANSPORT FUEL PROBLEM — Peter Linkin, Sandwich Student with P.A.U.

As Groucho Marx once hastily ordered to his chauffeur (Chico) in 'A Night at the Opera', "Quick, get some gas in this thing and take me to the Opera House! If you can't get gas, get ethyl. If you can't get ethyl, get Mabel!"

He clearly knew what he was talking about. A car can be made to run equally well on ethyl alcohol and on petrol, and indeed the former has several distinct advantages over the latter. The difficulty is in making sufficient quantities of it conveniently, and at a price competitive to petrol. The last point is, of course, becoming less of a problem as the price of crude oil increases, but this still does not affect the sheer quantities of fuel used by road transport vehicles all that much — at present we use, in the U.K., some 23 million tons of petroleum products each year in the forms of motor spirit and DERV. This is equivalent to some 9½ thousand million proof gallons of alcohol a year, a formidable figure when compared with the U.K.'s mid-20th-century annual output of 60 million proof gallons, or even the U.S.A.'s 500 million proof gallons. It was at this time (around 1950) that alcohol became available very cheaply by means of the 'new' process of cracking liquid hydrocarbon to obtain ethylene and hydrating the ethylene to make ethanol, or ethyl alcohol (this at a time when petroleum was significantly cheaper). Prior to this, ethanol had been produced by the fermentation of molasses or grain and distillation of the resulting solution, but this method disappeared entirely after 1960, when ethylene was very cheap indeed, the conversion cost also being low.

Now, of course, the price of liquid hydrocarbons, and thus of ethylene, has increased alarmingly, and the fermentation process is being reconsidered. The raw material for the process is the carbohydrate sugar, and two possible sources of sugar suitable for U.K. production are potatoes and sugar beet. Figures were obtained for the sugar yield per acre of both crops; and calculations were made to discover the number of acres of the crop required each year to supply enough ethanol to meet the transport fuel requirements of a town of 10,000 households, and also on a national basis. The figures were reduced to a common unit of "square yards of crop per year per household", and the results appear on the

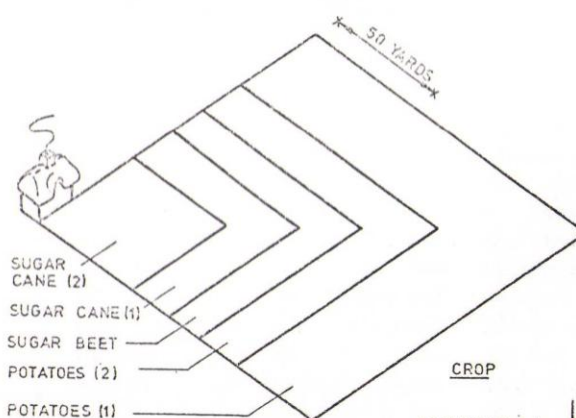
attached diagram. The calculation was performed for two differing values of yield per acre for potatoes, and in addition for two yield values of sugar-cane, which of course cannot be grown in this country, but which may have a photo-synthetic efficiency (this being the highest of any commercially grown plant) high enough to warrant the production of ethanol in, say, Jamaica, and its subsequent import.

As may be seen, we require a lot of land in order to produce ethanol from potatoes, since their sugar yield is comparatively low. In fact, in order to satisfy just the U.K.'s transport fuel requirements, we would need a quantity of potatoes almost exactly equal to 1½ times the world's normal annual output (enough said). Again, sugar beet is better in terms of yield, but there just is not the land available to increase the beet production to the required level, even though the Ministry of Agriculture, in its white paper "Food from our own resources", estimates that, in terms of the relation between British production costs and the value of imports, sugar beet is a better bet for expansion than any other agricultural product. Only the highest yielding sugar-cane seems at first glance to be feasible, and further figures on the costs involved would be useful, though at the moment facts on this topic are very hard to find.

So, on the face of it, this method of producing alcohol is not feasible as an

answer to the U.K.'s transport fuel problems, because of the quantities involved and the (still) high costs of production compared to those of petrol, though the gap is narrowing. Figures for the U.S. show ethanol to cost about 4 times as much per joule as gasoline. However, considerable interest has recently been shown in that country in methanol, or methyl alcohol, as an additive to petrol. It appears that up to 15% of methanol may be added to the petrol in existing cars without the need for any modifications, and use of this fuel mixture results in increased fuel economy, lower exhaust temperature, improved performance, greatly decreased emissions, and reduction in 'knocking' (and thus in the need of lead additives), the last two sounding particularly attractive to U.S. ears. In fact, the German firm BASF have converted a Volkswagen to run on a mixture of 88-octane petrol (lower grade than 2-star), methanol and water, the car possessing all the above attributes.

The answer to all our transport worries? Once again, the problem is production in large quantities; but recommendations are being made in the U.S. to augment the present production method from natural gas with that from coal, from commercial forests, and (yes, you guessed it!) from that by now familiar double-act from the best ecological magazines — municipal refuse and sewage sludge. Perhaps Groucho should have said, "If you can't get ethyl, get methyl!"



RELATIVE AMOUNTS OF LAND REQUIRED PER HOUSEHOLD TO SUPPLY ENOUGH ETHANOL TO MEET THE REQUIREMENTS OF THE ANNUAL U.K. CONSUMPTION OF TRANSPORT FUEL.

CROP	YIELD (tons sugar/ acre)	AREA REQUIRED (sq.yds./ ho'ld/year)
POTATOES (1)	0.8	20,000
POTATOES (2)	1.53	10,490
SUGAR BEET	2.37	6,758
SUGAR CANE (1)	4.00	4,355
SUGAR CANE (2)	7.00	2,305



NORTH SEA, JUTLAND Rachel Houghton



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FRI-SAT 6th and 7th FEBRUARY

*Back-stage staff are often forgotten, and so we list first some whose
names do not appear in the cast list which is set out below:-*

Stage Manager
Asst. Stage Managers
Lights

Robert Hall
Alan Chennel / Ron Sambell
Martin Wheatly / Kevin Foster

*Of the cast it will be seen that many played more than one part, and
some also worked backstage.*

First Voice.....Phil Dunbar
Second Voice.....Wendy Dearden
Captain Cat.....Win Spinks
1st Drowned/Mr Pugh.....Barrie Kidd
2nd Drowned/Mr Waldo/P.C. Attila Rees/
Butcher Beynon.....Max Williams
Rosie Probert/Mrs Dai Bread Two..Geraldine Thomas
3rd Drowned/Sinbad Sailors/Publicity..Rod Paddock
4th Drowned/Organ Morgan.....Mike Waters
5th Drowned/Rev Eli Jenkins.....Norman Price
Myfanwy Price/Lily Smalls/
3rd Woman.....Ceri Williams
Mog Edwards/Mr Ogmore.....Dick Sambell
Jack Black/Preacher/Utah Watkins/Dai Bread
Bessie Bighead/Scenery/Producer...David Ryden
Waldo's Mother/Mrs Dai Bread One/
Mrs Cherry Owen.....Paula Sambell
Waldo's Wife/Polly Garter/Music....Glynis Danvers
1st Neighbour/Mrs Pugh/
1st Woman.....Margaret Burgess
2nd Neighbour/Mae Rose Cottage/
Mary Ann Sailors/4th Woman.....Lynne Terry
3rd Neighbour/Mrs Peynon/2nd Woman....Liz Sambell
4th Neighbour/Mrs Organ Morgan/
Mother/Matti's Mother.....Alanah Streeton
Little Foy Waldo.....Alistair Crow
Matti Richards.....Jacqueline Ryden
Mrs Ogmore-Pritchard/Mrs Willy Nilly....Jean Crow
Mr Pritchard/Cherry Owen/Fisherman/
Scenery.....Steve Sambell
Gossamer Beynon.....Linda Thomson
Mrs Utah Watkins/Guide Book/
Assistant Stage Manager.....Janet Hall
Willy Nilly/Sound/Publicity.....Alan Ball
Ocky Milkman/Lord Cut-Glass.....Simon Dorman
No good Boyo/Fisherman.....Peter Cains
Maggy Richards/Child.....Julie Dearden
Billy Swansea/Evans the Death.....Paul Ryden
One of Mr Waldo's.....Rosanna Lord
Gweny.....Susan Constable
Johnny Christo.....Peter Phillips
Dicky.....Jeremy Thomas

PHOTOS BY JOHN BIRMINGHAM



The children, left to right: Jacqueline Ryden; Rosanna Lord; Jeremy Thomas (Dicky); Paul Ryden; Peter Phillips, Julie Dearden, Susan Constable (Gweny).



Second Narrator:
Gwen Reardon

Win Spinks as blind Captain Cat



Steve Sambell & Paula Sambell
as Mr. and Mrs. Cherry Owen



"HARLEQUIN", G159, Bldg. 77,
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Life on the ocean wave

Those who have been some years at Harwell may recall the article in a 'Harlequin' of 1959 which featured the voyage of "Bronzewing" when she was commanded by Charles Booth, one-time Vice-Commodore of Harwell Sailing Club.

The holder of a Master Navigator DTI certificate, Charles Booth of Rutherford Laboratory has lectured in nautical subjects for many years, both for the club and at Oxford where he is at present running a course at Bayswater School for RYA Ocean Yachtmaster. He has always been prominent in organising off-shore distance cruising. Many are the vessels and rigs he has handled. It seems that a constant problem has been the loss of good vessels to remote places: "Bronzewing" went to the Galapagos Islands, "Themis" to the West Indies, "Missell Thrush" and "Sanfeebe" he delivered to Malta, to name a few. Other vessels proved inadequate or expensive. There has thus been a constant search for a permanent vessel which would be beamy and of solid proportions so as to be "stiff" and give comfortable safe handling in a seaway. The ideal vessel would also have plenty of room for a fair number of persons, together with cabin privacy.

The search has now been rewarded with the converted Breton Tunnyman "Biche" (Hind), a vessel of beautiful proportions. She is 70 feet in length (outrig extra) with a 22 feet beam — you could ride a bike around the deck — and has no less than 4,000 square feet of sail. All accommodation is in fully fitted paired cabins.

Depicted above, "Biche" is now available on a permanent basis at special low rates for all forms of seaward interest. An attractive programme is planned, made up of home and foreign voyages, under sail, off-shore sea angling and aqualung diving.

If you would like to know more — yes, even if you have never been on a boat — you should make early contact in writing with Charles Booth at R2, Rutherford Laboratory. He will be glad to advise.



CULHAM
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20 YEARS +

REG YOUTHED
22 years

BRYAN PEBWORTH
25 years

DUDLEY BUTCHER
30 years

MARION DOHERTY
22 years

GRACE NAVARROT
20 years

THIS crossword puzzle has only one clue the word that is already printed in it.

Other CODEWORDS are now obtainable in book form—128 of them for 35p—from bookstalls or from Tandem, 14 Gloucester Road, London S.W.7.

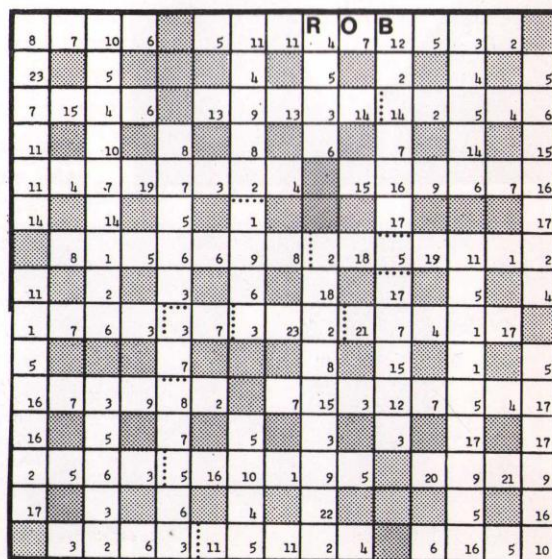
SOLUTION NEXT MONTH.

CODE- WORDS

SOLUTION TO
LAST PROBLEM

1 S; 2 N; 3 T;
4 A; 5 L; 6 E;
7 D; 8 J; 9 O;
10 G; 11 P; 12 C;
13 R; 14 U; 15 M;
16 F; 17 Y; 18 B;
19 H; 20 V; 21 W.

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TSB

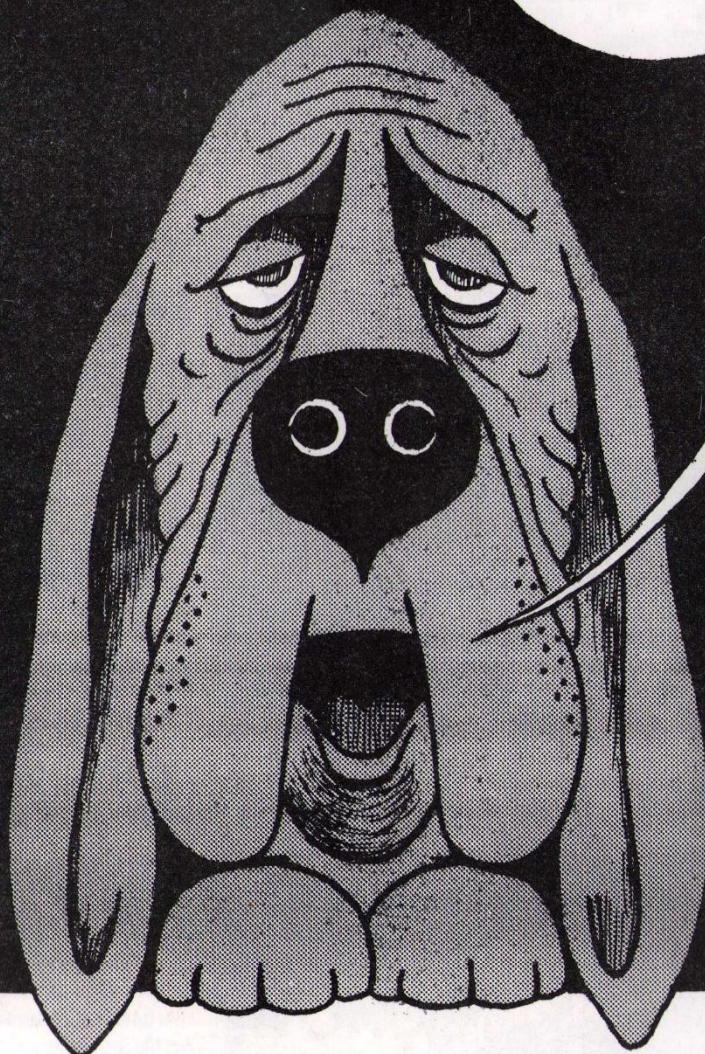
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TSB TSB TSB

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the Culham Laboratory,
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