THE MONOPOLIES AND MERGERS COMMISSION

Liquefied Petroleum Gas

A Report on the Supply in the United Kingdom
of Liquefied Petroleum Gas in Containers
of not more than 50 kilograms capacity
and not less than 150 grams capacity

Presented to Parliament in pursuance of
Section 83 of the Fair Trading Act 1973

Ordered by The House of Commons *to be printed*
25 February 1981

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[1]These members formed the group which was responsible for this report (see paragraph 1.2).

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CHAPTER 1

Introduction

1.1. The Secretary of State for Trade sent to the Commission the following reference on 12 July 1979:

THE SUPPLY OF LIQUEFIED PETROLEUM GAS

The Secretary of State, in exercise of his powers under sections 47(1), 49(1) and 51(1) of the Fair Trading Act 1973, hereby refers to the Monopolies and Mergers Commission the matter of the existence or possible existence of a monopoly situation in relation to the supply in the United Kingdom of liquefied petroleum gas in containers of not more than 50 kilograms capacity and not less than 150 grams capacity.

For the purpose of this reference 'liquefied petroleum gas' means a hydrocarbon mixture consisting predominantly of butane, butylene, propane or propylene or of any mixtures thereof; and the supply of liquefied petroleum gas in the above-mentioned containers shall include the supply of such containers, refillable and non-refillable, when supplied containing such gas.

The Commission shall upon this reference investigate and report on the questions:

Whether a monopoly situation exists and, if so:

(*a*) by virtue of which provisions of section 6 of that Act that monopoly situation is to be taken to exist;

(*b*) in favour of what person or persons that monopoly situation exists;

(*c*) whether any steps (by way of uncompetitive practices or otherwise) are being taken by that person or those persons for the purpose of exploiting or maintaining the monopoly situation and, if so, by what uncompetitive practices or in what other way; and

(*d*) whether any action or omission on the part of that person or those persons is attributable to the existence of the monopoly situation and, if so, what action or omission and in what way it is so attributable; and

(*e*) whether any facts found by the Commission in pursuance of their investigations under the preceding provisions of this paragraph operate, or may be expected to operate, against the public interest.

The Commission shall report on this reference within a period of eighteen months from the date hereof.

(*Signed*) D N BYRNE
An Under Secretary of the Department of Trade
12 July 1979

1.2. The Chairman of the Commission, acting under section 4 of the Fair Trading Act 1973 and paragraph 10(1)(*a*) of Schedule 3 thereto, directed on 25 July 1979 that the functions of the Commission in relation to the reference should be discharged through a group consisting of six members of the Commission, with Sir Max Brown as Chairman.

1.3. Notices inviting interested parties to submit evidence to the Commission in relation to the reference were placed in a number of newspapers and trade journals. These included the following:

The Financial Times	*The Daily Telegraph*	*The Scotsman*
The Western Mail	*The Belfast Newsletter*	*The Hardware Trade Journal*
The Press and Journal	*The Plumbing and Heating Equipment News*	*Mobile Home and Holiday Caravan*
The LP Gas Review	*Yachting World*	*Do-it-Yourself*

1.4. In addition, we sought the views of a wide range of bodies whose memberships comprise users of liquefied petroleum gas, as well as of suppliers of equipment in which that product is used. We also consulted the Confederation of British Industry and the Trades Union Congress.

1.5. We took oral evidence from the Health and Safety Executive, Commercial Union Assurance Limited, the British Standards Institution and the Liquefied Petroleum Gas Industry Technical Association (UK). We received written and oral evidence from The Calor Group Limited, Supergas Limited (and its associated companies), Camping Gaz (GB) Limited and statistical and other information from over 40 other suppliers of reference products.

1.6. Members of the Commission and of its staff visited the Central Laboratories of Calor Gas Limited at Addlestone, Surrey as well as a Calor Centre (see paragraph 6.21) and that company's liquefied petroleum gas filling plant at Millbrook, Southampton.

1.7. On 24 April 1980 we informed The Calor Group Limited of our provisional conclusion that a monopoly situation as defined in section 6(1)(*b*) of the Fair Trading Act 1973 appeared to exist in its favour. And on 15 May 1980 we informed that Group and six other suppliers of our further provisional conclusion that a complex monopoly situation as defined in section 6(1)(*c*) and (2) appeared to exist in favour of each of them. (Although there appeared to be *prima facie* grounds for reaching a similar provisional conclusion in respect of a number of other suppliers of reference product we judged the present extent of their individual involvement to be such as justified us in regarding it as *de minimis*.) In each case we notified the suppliers concerned of the grounds for our provisional conclusion and of the matters which appeared to us to require consideration in determining whether the monopoly situation or any steps taken by all or any of them to exploit or maintain that situation operated,

or might be expected to operate, against the public interest. Certain of the suppliers made representations to us in writing and representatives of The Calor Group Limited attended a hearing on 28 July 1980 for the purpose of discussing these matters with us.

1.8. We are grateful for the assistance given to us by all those who provided information required in our investigation. Some of the information supplied to us related to confidential business matters and we have sought not to disclose it in this report unless it is essential for a proper understanding of the issues. The main burden of our inquiry inevitably fell on companies within The Calor Group. They have been unfailingly co-operative and we wish to express our appreciation of all the help they gave us.

CHAPTER 2

The product and its uses

2.1. For the purpose of our investigation LPG is defined as 'a hydrocarbon mixture consisting predominantly of butane, butylene, propane or propylene or of any mixtures thereof . . . '. The product as so described is referred to in this report as 'reference LPG' when supplied in containers of not more than 50 kilograms and not less than 150 grams capacity.

2.2. Reference LPG could include a wide range of mixtures of hydrocarbon gases but with minor exceptions the only products supplied commercially are butane and propane which conform to the relevant specification as set out in British Standard (BS) 4250: 1975. In that BS it is provided that 'Commercial butane shall be a hydrocarbon mixture consisting predominantly of butanes and/or butylenes. It shall not contain harmful quantities of toxic or nauseating substances and shall be free from mechanically-entrained water'. Commercial propane is similarly described. In each case there are additional criteria which stipulate, for example, the maximum sulphur, hydrogen sulphide and acetylene content as well as providing that 'the odour of the gas shall be distinctive, unpleasant and non-persistent'.

2.3. One of the exceptions referred to in the preceding paragraph is liquefied Apachi gas.[1] This gas, whilst consisting 'predominantly' of propane and propylene, also contains substantial amounts of certain other gases (eg methylacetylene and allende) which do not form part of the BS specification of 'commercial propane'.

2.4. When LPG is required for use as, for example, a propellant in aerosols it is necessary to purify the commercial product by removing from it traces of sulphur, hydrogen sulphide etc. (This purifying process is referred to as 'de-stenching'.)

2.5. As both butane and propane boil at relatively low temperatures, they exist in the gaseous state unless they are contained under pressure or are refrigerated. The boiling point of commercial butane at normal atmospheric pressure is about 30°F and that of commercial propane is about −45°F. Both are therefore necessarily supplied under pressure in containers filled to about 82—90 per cent of their capacities. The storage pressure for liquid butane is about 25 lb per square inch and that for liquid propane about 100.

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[1] The patent for this product is held by Imperial Chemical Industries Limited and the trade mark 'Apachi' is owned by Air Products Limited. The product is understood to be for use as a cutting, brazing and pre-heating gas rather than as a fuel.

2.6. Commercial butane has a calorific value of 3,250 Btu/ft^3 and commercial propane 2,500 Btu/ft^3. (The comparable figure for natural gas is 1,000 Btu/ft^3.) Both gases are highly flammable in admixture with air in proportions which vary between two well-defined limits. Hence from compact storage in containers large volumes of high calorific gas can be obtained.

Uses

2.7. Reference LPG is used, generally in the form of butane gas, for most of those domestic purposes for which town gas and natural gas are also suitable. In addition—because its characteristics and properties enable it to be readily packaged and transported in suitable containers—LPG is widely used for recreational, leisure and industrial purposes at locations not usually or readily served by other forms of energy. Increasingly, it is also being used for automotive purposes—chiefly in vehicles having ready access to a central refuelling point.

2.8. In a minor number of instances the use of LPG in certain types of dwellings is either officially discouraged or prohibited. We include at Appendix 1 to this report an extract from the Penney Committee (Standing Committee on Structural Safety) Second Annual Report (November 1978) in this connection. A Home Office and Scottish Home and Health Department Fire Prevention Guide entitled *Safe Use and Storage of liquefied petroleum gas in residential premises* (first published in 1976 by HMSO) also warns against the introduction of LPG into certain high rise flats.

2.9. Reference LPG probably accounted for about 30 per cent of all LPG used in the United Kingdom in 1979 and is now predominantly used in the form of butane in mobile cabinet heaters for domestic space heating. Butane gas has, since January 1980, been included as an indicator for the movement of retail prices of domestic heating fuels. (It is a component of the section entitled 'Oil and Other Fuel and Light' for which the weight in the General Index of Retail Prices in 1979 was 4 units out of a total of 1,000.)

2.10. Our investigation is therefore primarily—but not solely—concerned with packaged reference LPG when supplied in the United Kingdom for use in the following broad categories of uses:

	Category of use	*Purposes*
(*a*)	Domestic	Space-heating, cooking, lighting, hot water supply and refrigeration.
(*b*)	Leisure	As at (*a*) above, in caravans and boats, as well as for barbecues and in green-houses. Also in camping and outdoor leisure activities generally.
(*c*)	Do-it-yourself	Blow lamps and other hand tools.
(*d*)	Industrial	Welding, cutting, soldering, general light engineering and building construction. Aerosol propellants.
(*e*)	Automotive	Fuel for fork lift trucks, cars, taxis, delivery and other vehicles which operate within a restricted radius of their base depots.

Containers for reference LPG and their fittings

2.11. The containers in which reference LPG is supplied are variously referred to by suppliers and by the general public as 'cylinders', 'bottles' and 'cartridges'. The first two of these designations are generally used to describe those containers which are refillable and the ownership of which usually remains with the supplier whilst the latter term is used to denote small non-refillable containers which are bought with their contents and discarded when the contents have been exhausted.

2.12. Most LPG containers in use in the United Kingdom are made of steel, though aluminium alloy is also used in certain cases (eg for containers for use in caravans). There are British Standards relating to such matters as the quality of materials used in the manufacture of steel containers, their design, construction and the testing of new containers as well as the periodical inspection and testing of refillable containers during service. (It is understood that a BS for seamless aluminium alloy containers is in course of preparation.) The larger the diameter of a container the thicker it must be to withstand the pressure exerted by its contents and therefore the heavier it is bound to be. For many years most suppliers of reference LPG have purchased steel containers which are suitable for propane in all design characteristics. This automatically makes them suitable for butane also.

2.13. For ease of handling, principally in the home, high regard must necessarily be paid to the weight of the filled container. Accordingly, the bulk of all reference LPG is supplied in Great Britain in containers of about 13–15 kilograms capacity (28–32 lb approximately). The weight of such a steel container when filled to its correct limit with liquid butane, is about double that of its weight when empty. (When so filled with propane, its gross weight is somewhat in excess of double the container tare weight.) In Northern Ireland 11·3 kilogram (25 lb) and 15 kilogram steel containers are the most widely used though some butane is also supplied in aluminium containers of 13 kilograms capacity which, when full, weigh about two-thirds that of full 15 kilogram steel containers.

2.14. An LPG burning appliance receives its gas supply via a valve on the associated container. The rate of flow of gas to the appliance can be controlled by means of either (*a*) a hand-operated tap or (*b*) a constant pressure governor called a regulator. In the case of an appliance which may, when in use, require a variation of flame (eg, a blow-lamp), the alteration of the rate of flow of gas by the use of a hand-operated tap provides accurate and immediate change of heat intensity. Where, however, it is important that the gas pressure shall remain constant irrespective of the heat output required (eg as with a cabinet heater), such constancy can be achieved only by means of a regulator. A regulator, unlikea hand-operated tap, will also maintain constant pressure to the connected appliance irrespective of the level of LPG in the container.

2.15. Until the late 1960s the making of the connection between the valve and the regulator involved in all cases the tightening of a nut with a spanner. For both propane and butane cylinders there is a BS for a valve (side-entry)

which has this type of connection and there is also a BS for a regulator to be used in conjunction with it (BS 3016 : 1972). The butane side-entry valve then in general use—known as the European standard valve—is of 21·7 mm dimension and the propane valve is of $\frac{5}{8}$ inch dimension. At that time Kosangas (from Denmark) introduced into Ireland a system for butane cylinders in which the connection between a valve of top-entry type and the regulator could be more readily and safely made. And by about 1970 another supplier of LPG in Northern Ireland (Shell-Mex and BP Limited) had also developed and adopted a clip-on valve and regulator combination which it regarded as being of improved design and as having similar advantages.

2.16. The general adoption of a clip-on type regulator for attachment to the hose of LPG burning appliances was stimulated by a Home Office recommendation in 1975 that butane cylinder valves should incorporate a pressure relief device. Valves so equipped are of the top-entry type and are now widely used throughout the United Kingdom. There is to date, however, no BS for a top-entry valve. Nor is there a BS specifically relating to the clip-on type regulator used with it though we understand that BS 3016: 1972 (see paragraph 2.15) is being revised with a view to including such devices in due course.

2.17. When suppliers of reference LPG converted to top-entry valves for their butane cylinders they did not adopt a single standard size of valve. Consequently a regulator of a size and/or type compatible with the valve on one supplier's cylinders may not now be compatible with those of another supplier. If a user wishes to change his source of cylinders he may have to buy a new regulator of appropriate dimension and type or buy an adaptor to connect the two otherwise incompatible elements.

2.18. Some small (2–3 kilogram) refillable LPG containers are screwed on to appliances either directly or via a pressure regulator. These containers are fitted with self-sealing valves and the appliances may be safely detached from both full and empty containers. Disposable cartridges of LPG (of, for example, 190 grams capacity) which are used for fuelling small appliances must, once attached to such appliances, not be removed from them so long as they still contain gas.

LPG burning equipment

2.19. The variety of purposes for which LPG is used (see paragraph 2.10.) illustrates the range of appliances available. However, the types of equipment in which most reference LPG is burned are domestic space heaters and cookers. And, of these, mobile cabinet heaters are now by far the most significant in terms of gas consumption. Such heaters, being mobile, can be readily moved to points where warmth is required. A common feature of them is that they incorporate a storage compartment for housing the butane container from which gas is supplied for burning in the associated appliance. Mobile heaters are also used extensively in non-domestic locations such as offices, shops, showrooms and industrial premises. Cookers are sometimes designed to house butane containers from which they are fuelled. When the form of LPG used in, for example, cookers is commercial propane it is stored in containers located outside the building.

CHAPTER 3

Supply and demand

Sources of supply

3.1. Crude petroleum, before it can be safely transported by tanker, must be stabilised to a low vapour pressure. During this stabilising process much of the gas present in the oil is removed. But, on average, about 2 per cent by weight of the stabilised crude still consists of residual butane and propane. This residue is fractionated off during the refining process and liquefied. LPG produced in United Kingdom refineries comprises about one-half propane and one-half butane and in recent years total production has varied from about 1·2 to 1·7 million tonnes annually. Until comparatively recently this ex-refinery LPG provided almost the sole source of LPG used in the United Kingdom though there were imports in 1978 and 1979 amounting to 95,645 and 176,317 tonnes respectively.

3.2. LPG is also found in dry gas fields such as those in the Southern Basin of the North Sea where it exists in admixture with methane and from which it is separated at the shore terminals. In the North Sea oilfields such admixtures are also found both free and dissolved in the oil. Where there is a pipeline to the mainland the gases may be brought ashore either in a gas line (such as the Brent—St. Fergus wet gas line) or in an oil line (such as the Forties—Grangemouth line). In each case the LPG gases are then separated and liquefied.

3.3. In the 1979 *Report on Development of the oil and gas resources of the United Kingdom,* the Department of Energy forecast that production of LPG from United Kingdom oil refineries would be, in 1980, 1·5 million tonnes and, in 1985, 1·8 million tonnes. In addition the quantities obtainable from United Kingdom gas and oil terminals were estimated at 1·8 million tonnes in 1980 and 4·1 million tonnes in 1985. In their 1980 Report the Department observed that 'there has been an increased demand for butane world-wide, both to improve gasoline octane levels and to produce more gasoline by alkylation of olefins from gas-oil crackers. New alkylation capacity coming onstream in the United Kingdom will create a demand for butane about equal to expected North Sea production over the same period.' A new gas gathering system planned for the mid-1980s could bring several million tonnes more LPG on to the United Kingdom market from 1985 onwards. The plans to land and to use these gases have not yet been finalised.

3.4. As the price of oil has increased (particularly since 1973) there has been a growing awareness of the economic importance of gases associated with its production and refining. This awareness has been reflected, in the United Kingdom, in governmental control imposed over the 'flaring' of wellhead gases in the North Sea. Other countries (eg Saudi Arabia and Algeria) which traditionally flared off enormous quantities of petroleum gases have in recent years

begun to build LPG storage and processing plants which may be expected to become operative in 1981 and 1982. According to one estimate, worldwide production of LPG will climb from an estimated 2·8 million barrels a day in 1979 to 4·2 million in 1985. The costs involved in bringing LPG to consumers—whether derived from gas deposits in the North Sea or from overseas sources farther afield—represent a significant part of the price at which it can be sold in competition with other forms of energy.

Demand

3.5. Until the late 1960s LPG had been chiefly used in the United Kingdom by Gas Boards in the manufacture of town gas. When, subsequently, natural gas replaced town gas, substantial quantities of LPG became available for industrial and domestic purposes. The extent to which the products (ie butane and propane) could be so used depended on their overall competitive position *vis-à-vis* alternative forms of energy.

3.6. In the leisure market—camping, caravanning etc—LPG already had become firmly established and, because of the environment in which such pursuits are conducted, it had little competition from other forms of energy. However, although this market was expanding, it clearly could not absorb any significant additional proportion of the increasingly large supplies then becoming available.

3.7. In the commercial and industrial market for reference LPG the main competition is from other types of 'portable' fuel. These include petrol, diesel and electricity for powering fork lift trucks and, increasingly, other forms of automotive transport. In road-making and construction, LPG is a substitute for fuel oil and coke; in steel cutting and welding for acetylene and in heating and cooking on building sites and temporary installations for paraffin and electricity. The form of LPG generally used for all these purposes is propane. (For some industrial purposes 'Apachi' gas, for example, may also be used—see paragraph 2.3.)

3.8. In the domestic market some users are wholly reliant on LPG burning equipment for heating and/or cooking (eg dwellers in caravans and in remote areas where houses are not supplied with alternative sources of energy). However, most users of such equipment reside in areas where some form of alternative fuel is available. Their choice of reference LPG is influenced by a number of factors including absence of installation costs, flexibility in use, high calorific output and avoidance of large periodical (eg quarterly) bills. According to information supplied to us by Calor Gas Limited, electricity is available to 99 per cent of homes in the United Kingdom, mains gas to 73 per cent whilst solid fuel is used in 28 per cent of them. The company also informed us that independent research carried out on its behalf showed that some 60 per cent of users who owned LPG burning cabinet heaters had access to mains gas also.

3.9. The competitive advantage enjoyed by packaged LPG in any particular application is therefore a function not only of its price but also of the cost and efficiency of appliances in which it is used and other less readily assessable

factors. One of its major advantages lies in its portability—including the portability of appliances in which the product is burned. Principally as a result of the development of the mobile cabinet heater, which first came on to the United Kingdom market in 1970, the consumption of liquefied butane supplied in cylinders in Great Britain increased by about 400 per cent (by weight) between the years 1970 and 1979. In comparing the relative advantages of different types of fuel for any purpose regard must, of course, be had to the cost of providing the equipment in which they are used as well as to the thermal efficiencies of such equipment.

3.10. In reasonably stable conditions (particularly as regards availability of supplies) reference LPG has proved to be a significant competitor with other forms of energy and the demand for it has increased in line with the increasing availability of supplies. But such balance of advantage as the product enjoys in any application can be maintained only so long as its price remains broadly in line with that of competing fuels where such exist.

3.11. We reproduce on page 11 an extract from a table prepared by Mr C M J Sutherland, Consulting Engineer, and published in *Domestic Heating plus Plumbing, Bathrooms and Kitchens* in April 1980 showing the comparative costs of a variety of fuels (including reference LPG) when used for domestic space heating. Although the data is based on costs of fuels in the London area in early 1980, we have no reason to believe that the comparisons are not representative throughout Great Britain generally. They confirm the claim made by the reference LPG industry that, for room heating, their product is less expensive than electricity supplied at the general tariff rate.

Relative energy costs in (a) United Kingdom and (b) Northern Ireland

3.12. The Department of Employment Family Expenditure Survey for 1978 (covering the two-year period 1977–78) shows that the cost of energy in Northern Ireland is substantially greater than elsewhere in the United Kingdom. Thus the average weekly cost of all items of fuel, light and power to the average household in the United Kingdom was £4·57 as against £7·40 in Northern Ireland. And the cost of fuel oil, other fuel and light to the average family was £1·10 per week in Northern Ireland as compared with £0·37 to families in the United Kingdom as a whole. In a Report prepared for the Northern Ireland Gas Employers' Board by Coopers & Lybrand Associates (published in June 1980) it is stated that 'In 1980, after the gas price increase effective from April, the average price per therm to the domestic consumer is about 21p per therm [in Great Britain]. In Northern Ireland it is about 65p per therm.'

The automotive market

3.13. Use in the United Kingdom of LPG as fuel for automotive purposes is at present largely restricted to vehicles engaged in local operations. This is to some extent due to the lack of nationally available re-fuelling facilities which, in turn, reflects the inflammable properties of the product (in this case liquid propane) and the safety requirements which must be observed in its storage and distribution. Apart from the other advantages which promoters of this fuel

TABLE 3.1 **Comparative space heating costs (London area: Spring 1980)**

Fuel	*Sold in units of*	*Cost per unit sold (in pence)*	*Heat content per unit sold on kWh basis*	*Application*	*Percentage average thermal efficiency*	*Cost per useful kWh (in pence)*	*Additional annual standing charge in £*	*Average* annual maintenance cost in £*	*Cost in £ of* 4000 kWh for room heating*
Bituminous Coal Group 2	50 kg	353	416·8	Open fire	30	2·82	—	—	113
Sunbrite Coke	50 kg	446	389·3	Room heater	65	1·76	—	—	70
Electricity General Tariff	1 Unit	3·65	1	Electric fire	100	3·65	—	—	146
		3·65	1	Electric radiators on day rate	100	3·65	—	—	—
Electricity White Meter	1 Unit	1·50	1	Single storage heater	95	1·58	5·84†	—	69
Economy 7 night rate		1·50	1	Multiple storage heaters	95	1·58	5·84†	—	—
Gas General Domestic Tariff	1 Therm	24·6‡	29·3	Radiant gas fire	55	1·526	17·60	—	79
		24·6‡	29·3	Single convector heater	70	1·199	17·60	9	75
Liquefied Petroleum gas	14·5 kg cylinders	610	198·4	Butane heater fed from cylinder	92	3·34	—	—	134
Paraffin	1 gallon	87	46·3	Paraffin heater	92	2·04	—	—	82

* Annual space heating requirement of a large room. Maintenance and standing charges included when applicable.

† Difference between White Meter and General Tariff annual standing charges.

‡ Cost of first 52 therms used in each quarter. Overall cost could be lower if more gas is used.

claim for it is the fact that, when used as road fuel, it is at present chargeable with revenue duty at a rate which is about one-half that for conventional fuel. This advantage is, however, offset to a substantial extent by the costs of converting vehicles for its use. In terms of total consumption of reference LPG the amount used for automotive purposes is, although increasing, still relatively insignificant and the major petrol distributors do not envisage that the product will become available at garages countrywide in the foreseeable future. A press report in October 1979 estimated that about 200,000 vehicles in the United Kingdom were equipped to use LPG for automotive purposes on public roads. The adaptation of vehicles to enable them to run on LPG as an alternative to petrol is currently reported to be a thriving industry. (We understand that at present 90 per cent of all taxis in Japan are now fuelled by LPG.)

Extent of demand

3.14. The amount of reference LPG supplied in the United Kingdom in each of the years 1976, 1977 and 1978 was as shown below. (The figures have been derived by collating data provided to us by all known suppliers.)

Year	*Amount supplied (tonnes)*
1976	280,553
1977	330,695
1978	382,541

3.15. The increasing importance of the reference LPG market relative to the United Kingdom market for all LPG will be seen from the following table.

TABLE 3.2 **United Kingdom consumption of LPG in the years 1976-78**

Tonnes

(1) *Year*	*(2)* *All LPG*	*(3)* *Reference LPG*	*Col (3) as a percentage of column (2)*
1976	1,308,620	280,553	21·4
1977	1,300,930	330,695	25·4
1978	1,317,880	382,541	29·0

Sources: The Institute of Petroleum and suppliers of reference LPG.

This table shows that whilst consumption of LPG as a whole remained almost stationary that of reference LPG increased by over 36 per cent in the period 1976–78. This increase was predominantly due to increased demand for reference butane.

3.16. Institute of Petroleum statistics show that consumption of butane supplied for all purposes decreased from 814,500 tonnes in 1976 to 797,150 tonnes in 1978 and rose again in 1979 to 890,060 tonnes. Consumption of reference butane, however, rose substantially during that three-year period. On the other hand, consumption of propane rose from 494,120 tonnes to 520,730 tonnes between 1976 and 1978 and to 554,750 tonnes in 1979 though the increase was mainly on account of non-reference demand.

3.17. Of all reference LPG supplied in the United Kingdom in 1978, over 70 per cent was in the form of liquefied butane, the remainder being liquefied propane and other gases (eg Apachi gas).

3.18. Partly on account of the great increase in the use of mobile cabinet heaters some 85 per cent of all reference butane is supplied in containers of capacities suitable for use with those appliances.

3.19. The supply of reference LPG (particularly butane) is, to a marked degree, a seasonal and weather sensitive business. This necessarily involves suppliers in the installation of substantial storage capacity and in the maintenance and servicing of stocks, plant and staff during periods of low activity. (We have been told that 5 per cent of total annual sales of reference butane are, in some years, made in a single week.) The financial impact of this factor is of considerable significance to suppliers.

Refillable containers in use; their number, cost and durability

3.20. There are no available statistics showing the number of refillable containers owned by LPG suppliers and used in the United Kingdom in connection with the supply of reference LPG. At a conservative estimate the number is probably in the region of 17–18 million of which some 10 million are required to provide a back-up for those in the custody of consumers. In addition the number of small containers (of under 4·5 kg capacity) owned by 'leisure' users is almost certainly in excess of 3 million.

3.21. The initial cost of containers is influenced by a number of factors including the type of material of which they are made (steel or aluminium), the size of the order and whether inclusive or exclusive of valves, as well as by the specification details. (In some cases, LPG suppliers require their containers to be of a standard higher than that of the BS.) However, a typical 13–15 kilogram steel LPG container appears to have cost about £12 at 1979 prices. The cost of a container of similar capacity when made of aluminium was then about £14–15.

3.22. In addition to initial cost, refillable LPG containers require regular repair and refurbishing as well as periodic inspections and tests (at 5- and 10-year intervals as provided for in BS 5430 : 1977). In this connection it is understood that such attention is more especially required for propane containers used for industrial purposes (eg, on building sites) than for butane containers which are used domestically. And a major company supplying gas for use by campers etc, estimated that between one-third and one-half of all its containers in circulation at any one time require refurbishing before refilling and re-issue.

3.23 The Liquefied Petroleum Gas Industry Technical Association (UK) told us that, if properly treated and maintained, the life of a refillable LPG container should be almost infinite. Another witness said that, in practice, 20–30 years would be the average approximate life span for butane containers whilst that of propane containers could generally be expected to be somewhat less.

The supply of mobile cabinet heaters

3.24. The mobile cabinet heater market has, in the terms of more than one witness, 'exploded' during the last 3–4 years. Sales in the United Kingdom in 1979 have been estimated at well over 0·6 million units—an increase of about one-fifth over the previous year. The number of such heaters owned domestically (and mostly used intermittently rather than continuously throughout the year) is probably in excess of 3 million.

3.25. The dedication with which reference LPG suppliers promote the sale of mobile cabinet heaters is accounted for not only by the profit margin from each sale but also by the fact that most new customers can be expected also to purchase LPG from the vendor of the heater. And, for the reasons given in paragraphs 5.22 *et seq,* once the customer has paid a deposit to a particular supplier for a gas container he is unlikely readily to switch to another supplier. Thus the amount of LPG sold by a supplier is likely to bear a fairly close relationship to his sales of heaters. On average, it is estimated that each domestic cabinet heater consumes the contents of some 6–8 containers each of 13–15 kilograms of LPG in a year of average weather conditions.

3.26. Until 1975 almost all LPG burning cabinet heaters were imported (principally from Spain). Today the market is being increasingly supplied from indigenous sources. Cookers on the other hand appear to be mostly of United Kingdom manufacture though significant imports from France and Italy are made to satisfy a particular demand which is largely confined to the Northern Ireland market.

CHAPTER 4

Safety

4.1. Having regard to the physical properties of LPG and to the fact that it is necessarily sold in packaged form, as well as to the widely varying conditions and degrees of care with which the product—before, during and after packaging —is handled, transported and used, safety precautions are of special concern both to the industry itself and to the public at large. We consider in the following paragraphs both the statutory provisions and the non-statutory arrangements concerned with LPG containers and their filling, and the non-statutory arrangements concerned with the safety of LPG appliances.

(*a*) Statutory provisions

4.2. Statutory provisions relevant to the LPG industry in Great Britain include the Safety at Work etc, Act 1974 and the Highly Flammable Liquids and Liquefied Petroleum Gases Regulations 1972.

4.3. The 1974 Act is concerned, *inter alia,* with the general responsibilities of employers to their employees whilst at their place of work. The 1972 Regulations prescribe for the safe storage of LPG (as well as other gases) and for the marking of tanks, vessels, cylinders etc, used as containers for that product in factories and commercial premises. A plant used for the filling of LPG cylinders normally constitutes a factory for the purpose of these Regulations.

4.4. The body responsible in Great Britain for administering the provisions of the 1974 Act and the 1972 Regulations in premises subject to the Factories Act 1961 is the Health and Safety Executive (HSE). In exercising their responsibilities HSE have regard to codes of practice and recommendations developed within the industry itself and to relevant specifications set out in British Standards (BS).

4.5. In Northern Ireland the statutory and administrative arrangements closely parallel those in Great Britain. The provisions of the Health and Safety at Work (NI) Order 1978 are equivalent to those of the Safety at Work etc Act 1974 and The Highly Flammable Liquids and Liquefied Petroleum Gases Regulations (NI) 1975—made under the Factories Act (NI) 1965—are equivalent to the 1972 Regulations referred to in paragraph 4.2. Administration of the Order of 1978, the 1965 Act and subordinate legislation is the responsibility of the Health and Safety Inspectorate of the Department of Manpower Services for Northern Ireland.

(*b*) Codes of practice and recommendations for LPG filling plants

4.6. As regards LPG filling plants, major safety considerations are the avoidance of over-filling and the prevention of leakage of cylinders. HSE relies largely on codes of practice and recommendations formulated by the Liquefied

Petroleum Gas Industry Technical Association (LPGITA). That Association comprises all the producers of LPG, almost all the suppliers of reference LPG in the United Kingdom as well as a number of LPG container and appliance manufacturers. Apart from its other functions, it seeks, in conjunction with bodies such as HSE, BSI and government departments, to set and maintain the highest level of practicable safety arrangements in all aspects of the LPG industry.

(*c*) **British Standards**

(*i*) *General*

4.7. The British Standards Institution (BSI) from time to time publish British Standards relating to the design, construction, durability, safety etc of particular products. Whilst BS are legally enforceable only if made so by legislation, they are widely accepted as national guidelines. BSI do not seek (by inspections, for example) themselves to enforce general observance of BS. But manufacturers and other suppliers of products for which BS exist may find that a commercial advantage can be gained from such observance. Non-observance of their provisions could, in certain circumstances, be regarded by the courts with disfavour.

(*ii*) *Containers*

4.8. As regards containers for LPG, BS 5045: Part 2: 1978 provides detailed specifications for the design, construction, inspection and testing of steel containers of up to 130 litres water capacity with welded seams. *Inter alia* it also provides that the method of manufacture and the testing of the containers should be carried out to the satisfaction of an Independent Inspecting Authority. Such Inspecting Authorities are approved by HSE.

(*iii*) *Appliances*

4.9. A list of BS relating in whole or in part to LPG burning appliances is at Appendix 2. BSI also operate a system whereunder, subject to a mutually agreed scheme of supervision and control, indication of conformity to a particular BS is provided on appliances by a 'Safety Mark' or Kitemark. BSI take action necessary to ensure compliance with the conditions governing each of these schemes.

4.10. For LPG burning appliances for which BS exist, BSI have registered a Test House of Assessed Capability and appliance manufacturers may submit, for their own purposes, to this Test House, samples of their products for testing against relevant BS.

4.11. Calor Gas Limited Central Laboratories of Coombelands, Addlestone, Surrey is the only registered Test House of Assessed Capability for this work in the United Kingdom.

'Calor Approval'

4.12. In addition to testing products against BS criteria, Calor Laboratories also issue certificates of 'Calor Approval'. In order to obtain 'Calor Approval' and thus be eligible for distribution through the Calor network of dealers, stockists and Calor Centres, the appliance must satisfy performance criteria which are not covered by, for example, BS 5258 since that Standard is, by definition, only concerned with safety. In carrying out tests relating to performance other British Standards are used by the Laboratories where they are available. In oral evidence the company said that, where such other BS are not available, its Laboratories use criteria of their own formulation and that details are made available to applicants for 'Calor Approval'. Products so tested can be marketed through any distributor but when marketed by Calor, such 'approved' products bear a 'Calor Gas Approved Badge' (see paragraph 4.14).

4.13. In pursuance of its declared concern for safety, Calor Gas Limited requires undertakings from its distributors:

> '7(v) not knowingly to sell Gas for use in appliances or equipment which has not been Approved or which does not bear the British Standard Safety Mark:'

In this connection the word 'Gas' is defined as Calor gas and the word 'Approved' is defined in the following terms:

> '3(xi) "Approved" means when applied to Equipment that a Laboratory Certificate has been issued by the Company signifying that Equipment of this particular type has been found to be satisfactory to relevant standards for performance and safety, including British Standards where applicable or, when applied to certain specialist Equipment specified by the Company that the manufacturer who supplies this Equipment has been recognised as a competent manufacturer of this Equipment by the Company.'

In this connection 'Equipment' means appliances, accessories and fittings Approved for use with Gas.

4.14. The 'Calor Approved Badge' is defined in Calor's agreements with its main dealers and dealers in the following terms. (A similar definition is provided in Calor's stockist agreements.)

> '3(xii) "Calor Gas Approved Badge" means such badge or other signification that is issued by the Company from time to time to be placed upon or affixed to an appliance to signify to third parties (*a*) that such appliance is Approved; (*b*) that such appliance has been tested or otherwise checked (in accordance with the Company's policy from time to time) by the [Main] Dealer in accordance with Clause 7(vi) hereof; (*c*) that such appliance has the Company's safety and service support including the Company's quality control checks of manufacturers and warehouse stocks.'

National Testing Laboratory Accreditation Scheme

4.15. On 30 June 1980, the Department of Industry announced the setting up of a voluntary national scheme for accrediting testing laboratories. The scheme is intended to become operational in 1981. Although full details of the scheme

(National Testing Laboratory Accreditation Scheme (NATLAS)) have not yet been decided it seems likely that NATLAS will 'accredit laboratories for particular types of test, wherever possible to specified technical standards laying down specifications against which certain products are to be tested or setting out procedures for the tests themselves'. Calor informed us in July 1980 that it would decide whether to join the scheme when more information regarding it has become available.

Product liability

4.16. Under present United Kingdom law the seller is liable to his customers for the quality of his products and claims by injured consumers lie against him in the first instance. Liability may, in certain circumstances, be passed back along the chain of distribution, successive buyers suing successive sellers. Claims by injured third parties for damages can succeed only if negligence is proved.

4.17. It is understood that a EEC draft Directive proposes to make producers legally responsible for defects in the products they put into commercial circulation.

4.18. It is current practice for manufacturers and distributors of LPG appliances and equipment to seek to cover their legal liability by effecting public/products liability policies. The terms of such policies may vary as between different suppliers.

Accidents

4.19. Reports (which may not be comprehensive) made to LPGITA by its membership concerning accidents connected in some way with the supply and use of LPG show that in 1978 there were 800 incidents involving LPG of which 754 occurred in domestic environments. Comparable figures for 1977 were 680 incidents of which 641 occurred domestically. (In each year the balance of the incidents involved bulk LPG or LPG used in industrial applications.) Noting that total consumption of LPG had remained virtually static during the years in question (see also Table 3.2), LPGITA has expressed concern that the rate of increase in reported incidents has been particularly rapid in the last three years (ie 1976–78).

4.20. The following is an extract from LPGITA's 1978 summary of reported incidents. It indicates that the increase in domestic incidents had a direct relationship to the increased use of cabinet heaters (including regulators used with them).

> In 1978 the typical domestic type LPG incident involved a cabinet heater (65 per cent of incidents) owned by a domestic customer (56 per cent) who experienced difficulty in connecting up to the cylinder (41 per cent) and found the regulator or control valve troublesome (36 per cent), the leakage of LPG subsequently being ignited and resulting in a fire (80 per cent). Fortunately,

the majority of incidents were probably of a minor nature—83 per cent attracted no publicity of any kind—although in 35 per cent there was some personal injury but only in 2 per cent were there fatalities. In all there were 314 non-fatal casualties and 19 persons died.

The profile outlined above has changed very little over the years. Difficulty with fitting the regulator has certainly been a recurring feature and, with increasing sales of such appliances, the cabinet heater has featured more often than cookers in incidents in recent years. Cabinet heaters, in 1978, were associated with 486 incidents (65 per cent) compared with 137 (18 per cent) associated with cookers; the corresponding figures for 1973 were 109 space heaters (27 per cent) and 139 cookers (34 per cent). As far as injuries are concerned the average over the period 1973–77 indicated that 64 per cent of incidents are injury free, so that 1978 with 65 per cent injury-free incidents is in line with earlier years. On the other hand there were 19 fatalities in 1978 compared with the average for 1973–77 of only 16. Better reporting and a more widespread use of LPG have been contributory factors in the disturbing upward trend in LPG incidents. Relating the number of incidents to tonnage of LPG sold goes some way towards putting the incidents into perspective, but it is disappointing to report that the non-availability of the number of LPG appliances in use prevents an alternative assessment of risk from being made. However, the LPG incident can in general be said to be a consumer responsibility and the solution to the problem posed by the rising number of incidents would seem to lie in a concentrated programme of consumer education.

CHAPTER 5

The pattern of supply

5.1. In the year 1978 there were 47 suppliers of reference LPG in the United Kingdom, excluding the Channel Islands and the Isle of Man. (For this purpose the term 'supplier' denotes an individual, firm or company purchasing LPG in bulk and supplying it in containers of reference capacities.)

5.2. One company—Flogas Limited—domiciled in the Irish Republic supplies reference LPG in Northern Ireland. (This company registered a wholly-owned subsidiary—Flogas (NI) Limited—in November 1979 primarily for name protection purposes in Northern Ireland and to act as agent of the parent company there for the purpose of dealership agreements. We have treated the parent company and the subsidiary as a single supplier for our purposes.)

5.3. The number of United Kingdom suppliers of reference LPG is increasing annually. The rate of increase is, however, modified to some extent by amalgamations and by the number of companies ceasing to trade. The net increase in the number of suppliers at present is of the order of 10–15 per cent annually.

Entry barriers

5.4. The main difficulty for any firm wishing to enter the reference LPG market appears to be the cost of (*a*) meeting mandatory safety standards in the handling, packaging and transporting of LPG, (*b*) acquiring and servicing cylinders and other necessary containers, (*c*) providing filling plants and (*d*) establishing an economic distributive organisation.

5.5. In order to set up as a supplier of, say, 7 per cent of the United Kingdom market we have been informed that it might be necessary to establish three filling plants at an estimated (1979) cost of at least £500,000 and to acquire a stock of 500,000 cylinders at an estimated (1979) cost of at least £6,000,000. These costs, apart from the other expenditures referred to in the preceding paragraph, are of such magnitude that only a financially powerful enterprise could contemplate entry to the market on a significant scale nationally. Participation in the industry even on a restricted, local, scale involves significant capital outlay not only in acquiring plant and equipment but also in meeting the strict requirements of planning and safety authorities.

The suppliers

5.6. The following table provides a breakdown, by market size, of all known United Kingdom suppliers of reference LPG in 1978. (The year 1978 for this purpose relates, for certain suppliers, to a financial year ending on 31 March 1979.)

TABLE 5.1 **Suppliers of reference LPG in terms of their 1978 sales**

(1)	(2)	(3)
Number of suppliers	*Individual level of 1978 sales (in tonnes)*	*Percentage (approx) of total market accounted for by all suppliers at (1)*
9	under 100	0·1
15	101–500	1·0
4	501–1,000	1·0
13	1,001–5,000	7·7
2	5,001–10,000	3·2
NIL	10,001–20,000	—
3	20,001–50,000	21·6
1	ex 50,000	65·4
47		100·0

5.7. It will be noted that four suppliers accounted for some 87 per cent of the market in 1978. These suppliers are identified in the following table.

TABLE 5.2 **Major suppliers of reference LPG; their 1978 sales and areas of operations**

Name of supplier	*1978 sales (in tonnes)*	*Area of operations*	*Percentage (approx) of total United Kingdom market*
Calor Gas Limited	249,715	Great Britain	65·3
Calor Kosangas Northern Ireland Limited	28,042	Northern Ireland	7·3
Shell UK Limited (trading as Shell UK Oil)	31,276	Great Britain	8·2
British Oxygen Company Limited (including subsidiaries)	23,708	United Kingdom	6·2
			87·0

5.8. The two Calor companies (Calor) referred to in Table 5.2 supplied about 72·6 per cent of the total United Kingdom market in 1978. We estimate that their combined share of that market was about 71·3 per cent in 1976 and 72·0 per cent in 1977. Thus, notwithstanding the increase in the number of participants in the industry, Calor has at least maintained its share of the market.

5.9. It is a feature of the industry that the majority of its participants supply reference LPG within a restricted and well-defined area. The only suppliers significant in terms of quantities supplied and operating nationwide are Calor and BOC. As the latter company is, for the most part, engaged in the supply of LPG for industrial purposes, Calor is the only nationwide supplier of reference LPG for domestic purposes. (The company is a supplier of LPG for other purposes also.)

The oil companies as suppliers

5.10. It will be seen from Table 5.2 that Shell supplies reference LPG in Great Britain only. This situation arises from the fact that until the end of 1973 Shell-Mex and BP Limited (SMBP) was employed as the sole agent to market and distribute *inter alia* LPG in the United Kingdom on behalf of both Shell and BP. From 1974 those functions were undertaken by two subsidiary companies of SMBP. During 1974 it was decided that the SMBP group trade and assets should be transferred at the end of 1975 in part to Shell and in part to BP. The SMBP group trade in reference LPG had been based on two filling plants, one at Stanlow in Cheshire and the other at Belfast in Northern Ireland. The former of these plants belonged to Shell and the latter to SMBP. As part of transfer of assets BP acquired SMBP's Northern Ireland business in reference LPG—a business which had been already physically integrated with BP's refinery complex at Belfast—and Shell acquired the business in Great Britain. Both Shell and BP consider that the additional capital investment which would be required for significant extension of their businesses in reference LPG can at present be more productively employed in other aspects of their operations. Shell has told us that it has no agreement or other arrangement with BP whereby each company shall restrict its activities in the reference LPG market to different parts of the United Kingdom. BP has pointed to the cost and practicality of transporting LPG in containers by sea adding that it would not be commercially attractive to supply reference LPG from its Belfast filling plant in any other region of the United Kingdom.

5.11. Calor's operations are dealt with more particularly in Chapter 6 and those of other suppliers (including Shell, BP and British Oxygen) in Chapter 7.

The distributive pattern

5.12. It is the practice of LPG suppliers generally to distribute their products either wholly or partially through dealers and stockists on the basis of agreements which specify the products and the terms on which they may be supplied to users. In some cases the area of distribution is defined and it is an almost universal condition that the distributor shall not sell competitors' products—save as regards gas supplied in small containers of up to about 3 kilograms capacities (eg, Camping Gaz).

5.13. In some cases reference LPG suppliers arrange for their distribution network to include main dealerships. In such cases the main dealer may be required to select and appoint stockists, subject to the supplier's approval. The Calor company also operates a number of Calor Centres as if they were main dealerships. A common feature of these arrangements is that the main dealer is not restricted to wholesaling only. He may supply products by retail also.

Payment for use of containers

5.14. In the generality of cases the supplier provides his distributors with filled containers. On the first sale to a customer of gas in a refillable container the customer is, in addition to paying for the contents, usually required to pay a

sum in respect of the use of the container and of its replacements and to accept certain conditions as set out in a document which may be described as a Refill Authority Agreement, Cylinder Hire Charge Agreement or Cylinder Hire/Deposit Charge Agreement. A copy of the Cylinder Refill Authority Agreement currently used by Calor Gas Limited in Great Britain is reproduced at Appendix 3 and its terms are generally representative. The initial cylinder hire/refill authority charge may vary as between different suppliers and sometimes for cylinders of different capacities. (The major suppliers, however, now make a standard charge irrespective of the size of cylinder supplied.)

5.15. On returning an empty container in acceptable condition to the distributor, the customer is entitled to a replacement container full of the same product on payment of the current charge for the refill.

5.16. Empty refillable containers are returned to the supplier who, having examined and, if necessary, refurbished and repaired them, re-tests and refills them and returns them to his distributive network.

5.17. A common feature of Cylinder Refill Authority/Hire Agreements is the provision for the refund to a customer within stipulated periods of a proportion of the initial charge or deposit should that customer return a container to the supplier in acceptable condition and not require a replacement filled container. A representative version of this arrangement is at paragraph 7 of Appendix 3. (In one or two relatively minor instances the supplier undertakes to return the initial deposit in full.)

5.18. Where a user of reference LPG purchases that product on a substantial scale—usually at least three tonnes a year—he is accorded 'contracted customer' status. In such cases the contract stipulates the basis on which charges for the use of containers will be made. In some instances no charge is made or a charge is made only if containers are held by the user for more than, say, two months. In other cases a refundable deposit is required for each container initially supplied. But in all the arrangements provision is made for these charges to be reduced or increased by reference to the rate of turnround of the containers (the 'cylinder turnround factor') calculated in accordance with criteria specified in the supply contract.

The conditions on which refillable containers are made available to users of LPG in certain other countries

5.19. Enquiries made through United Kingdom overseas posts indicate that the conditions under which refillable LPG containers are generally made available to users in France, Austria, Spain, West Germany and Italy are broadly similar to those which operate in the United Kingdom (ie ownership of the containers remains with the suppliers). On the other hand in Norway, Sweden and Portugal containers are sold to LPG users.

5.20. We have also learned of a decision of the Australian Trade Practices Commission (June 1977) on applications made to them by a number of LPG suppliers seeking approval for certain business arrangements which might otherwise breach the Federal Trade Practices Act. These arrangements related to the supply of LPG, both in bulk and in cylinders, to domestic and industrial users. In New South Wales a supplier of LPG may market his product in another supplier's containers provided consent of the latter has been obtained to the arrangement. A similar practice is provided for in the Queensland Gas Act (1965) in respect of containers of a water capacity greater than 50 lb whilst the State of Victoria was, at the date of the Commission's decision, also said to be contemplating the introduction of similar legislation.

Market rigidities

5.21. All brands of commercial butane and all brands of commercial propane as sold by all suppliers of reference LPG are, respectively, identical. This circumstance might suggest that a user may elect from time to time to obtain his requirements of either of these gases from different suppliers. In practice, however, there are certain restraints, generally concerned with safety considerations which militate against such flexibility. These are described below and are considered more fully in Chapter 10.

5.22. The cylinder deposit/refill authority charge arrangement requires the user to make an initial payment which was, in 1979, for a 15 kg butane container, about three times the price of a refill. At best only part of this payment may be returned to him if the user decides to change his supplier after a period of time. This arrangement therefore tends to cause users to restrict their custom to one supplier only. In addition the container used by a new supplier may be fitted with a valve which is of a type and/or of dimensions different from those of the valve on cylinders as provided by the previous supplier. This incompatibility can be overcome only if the user purchases a regulator or an adaptor so that the gas in the new cylinder may be properly released for use in the customer's appliances (see paragraph 2.17). In 1979 the retail price of a regulator was about £5 and that of an adaptor £3.

5.23. When a user of reference LPG moves from an area which is served by a particular supplier to another area not so served, these expenditures cannot, under present general trading practices, be avoided.

5.24. As the Calor companies require that their distributors shall not supply reference LPG for use in appliances which have not been approved as conforming to BSI safety standards or, in their absence, to Calor's own standards it may be necessary for owners of such appliances to acquire 'approved' appliances or to take such other steps as will enable them to obtain gas from those suppliers. We were told of instances where owners of certain mobile cabinet heaters (for which until 30 April 1980 no BS regarding safety standards existed) had been refused supplies of gas by Calor distributors for use in appliances which had not been approved by that company's central laboratories.

5.25. As noted in paragraph 5.12, agreements between suppliers of reference LPG and their dealers, retailers and distributors in many instances require an undertaking that the latter shall not be in any way engaged in supplying gas which is in competition with the suppliers' products. This provision, although apparently not always rigorously enforced by some of the smaller suppliers, relates to at least 95 per cent of all sales of reference LPG. We have been informed of many instances when, due to a variety of causes (eg strikes, adverse weather, shortage of supplies), customers have been unable to obtain their requirements of a particular brand of product and, because of the exclusivity provision referred to herein, their dealer or retailer has been unable to supply an alternative brand. In such circumstances the user who does not have a reserve cylinder has either to wait for supply to be resumed or to seek supplies from another source—with, in the latter event, some or all of the financial consequences referred to above.

5.26. Representations have been made to us that greater flexibility in the supply of reference LPG and, therefore, greater competition would be achieved if refillable containers owned by one supplier could be filled by any LPG supplier and not, as at present, only by, or on behalf of, the owner.

Arguments for and against present practices

5.27. Those supporting the existing situation argue that compliance with safety provisions (see Chapter 4) could not be relied on if containers were allowed to pass freely among fillers some of whom might, in the interest of keeping down costs, deliberately fail to pay due attention to safety. Moreover, some of the main suppliers adopt standards which they regard as stricter than those laid down in the foregoing provisions. To allow others to fill their cylinders would, therefore, in their view prejudice the present good record of the industry in safety matters, with adverse consequences which would be bound to be reflected in insurance premium levels and on sales of the product and of associated equipment.

5.28. Those in favour of changing the present system argue that the practice whereby the supplier retains ownership of containers is an arrangement which is not only restrictive in its effect but which also gives the owner the best of two worlds. For, whilst retaining ownership, he not only recovers from the customer by way of a deposit the actual cost of the container but also retains the sole right to refill it for as long as it lasts. The customer, it is argued, often is not fully aware that the sum he has paid for use of the container is not an outright purchase transaction; the conditions of the Refill Authority/Hire Charge Agreement are often set out in small print on the back of what is regarded as an invoice; this document, whilst purporting in its terms to endure for (in some cases) 50 years, is often lost or mislaid and so cannot be produced in support of a claim for a refund where this is otherwise payable. For all practical purposes the person who has paid the initial deposit is likely to regard the container as his own property, it is said.

5.29. Opposers of existing arrangements also point to the fact that suppliers of gas in small (up to 3 kilograms) containers—eg Camping Gaz (GB) Limited—and a few of the smaller suppliers of gas in larger containers—eg, Travel Gas (Midlands) Limited—do in fact already sell their refillable containers and that no significant danger has been created thereby (see also paragraphs 5.19 and 5.20 as to the practice in certain other countries). In short, it is argued that the present practice is more concerned with restricting competition than with ensuring safety.

5.30. In defence of the present practice it has been pointed out to us that for every container for which a supplier of reference LPG receives an initial down payment by way of deposit, hire charge etc, he must provide a back-up stock of replacements for which he receives no such payment and maintain them in a safe and serviceable condition. Thus, in effect, the payment made by a customer represents only a part of the cost of providing and maintaining the containers which he uses. Taken in isolation little or no profit is said to accrue to major LPG suppliers from the 'container side' of their businesses.

5.31. Finally, it has been represented to us that the practice whereby the major suppliers of reference LPG now market their individual brands of the identical butane product in containers which have valves of a particular dimension and design is a commercial expedient designed to maximise profits by ensuring that the containers must be returned to the original suppliers for refilling and has little regard to the interests of the LPG using public (see, for example, paragraph 5.22). There is no valid safety reason, it is said, why top entry valves and clip-on regulators for butane containers should not be of standard type and size. Some LPG suppliers, however, stress that non-uniformity of top entry valve sizes has a safety aspect in that it makes it more difficult than might otherwise be the case for their containers to be filled by suppliers who may pay less regard to safety.

CHAPTER 6

The Calor Group Limited

6.1. The Calor organisation is, as has already been shown (see paragraphs 5.7 and 5.8), by far the largest supplier of reference LPG in the United Kingdom. It is on that account appropriate to ascertain how it has achieved that position and how it seeks to maintain and develop it. These are amongst the matters dealt with in this chapter.

History and organisation

6.2. The Calor business had its origins in the Modern Gas and Equipment Company Limited which was formed in 1935 to sell butane in cylinders, and appliances for use with butane, in the United Kingdom. Later that year the business and the assets were transferred to Calor Gas (Distributing) Company Limited, an associated company incorporated in August 1935.

6.3. Although the company's growth was inhibited by the war its sales of 2,900 tons of butane in the financial year to 31 July 1940 had increased to 4,100 tons by 1946. In 1947 Research and Development Laboratories were opened at Addlestone, Surrey and in 1948 the company constructed its first cylinder filling plant.

6.4. In 1948 Calor went public when the whole of the issued share capital of Calor Gas (Distributing) Company Limited was acquired by the newly formed Calor Gas Holding Company Limited. In that year the company sold 11,900 tons of butane and had a network of more than 700 dealers throughout England and Wales as well as concessionaires in Scotland and Northern Ireland.

6.5. In 1954 the Irish concessionaire—McMullans Limited—terminated its agreement with Calor and subsequently merged with the Danish Kosan organisation in Ireland to form McMullans Kosangas which ultimately became LPG Limited. That company was acquired by Calor in 1971 to form 'Calor Kosangas' in both the Republic and Northern Ireland.

6.6. In 1955 the company began selling propane, both in cylinders and in bulk, and by a number of acquisitions in the years 1957–64 extended into the field of precision engineering. These acquisitions formed the basis of the Calor Engineering Division which now manufactures and assembles, *inter alia,* cylinder valves and certain LPG appliances which are supplied to the market by Calor Gas Limited in Great Britain and by Calor Kosangas Northern Ireland Limited in Northern Ireland. In 1957 Calor acquired two road transport companies which, as Calor Transport, provide services for Calor Gas Limited as well as being engaged in the distribution of bulk gases and liquids on behalf of third parties.

6.7. Significant subsequent developments include the building of a network of filling plants to support the company's national coverage and the acquisition (in 1963) of Scottish Rural Gas Limited and a small cylinder business called Dexagas as well as Calor's first retail outlet. Further retail outlets were subsequently established in areas of high population. These outlets became known as 'Calor Centres' (see also paragraph 6.21).

6.8. In February 1969 Imperial Continental Gas Association (IC Gas) acquired the remainder of the equity in Calor Gas Holding Company Limited which it did not already own. This development was followed by a number of accountancy and organisational changes including the setting up of a divisional structure and the creation of The Calor Group Limited as the company owning the several operating companies and as the provider of services (in administration, personnel, accounting and research) to those companies.

6.9. In October 1979 Calor acquired from the British Gas Corporation their reference LPG business in South West England which had been operated under the name 'Glogas'. (That business then accounted for about 1·4 per cent of the total United Kingdom market.)

6.10. In investigating the operations of the Calor organisation in the reference LPG field we have necessarily concerned ourselves principally with the activities of the operating companies, ie Calor Gas Limited in Great Britain and Calor Kosangas Northern Ireland Limited in Northern Ireland. However, as each of these companies is a wholly-owned subsidiary of the Calor Group Limited that Group may more conveniently be regarded, in the context of the United Kingdom as a whole, as the 'supplier' for the purposes of establishing the existence, or possible existence, of a monopoly situation. Henceforth we use the terms 'Calor' and 'the company' in this report to indicate either the Calor Group Limited or Calor Gas Limited as the context may require. Where specific reference to Calor Kosangas Northern Ireland Limited is necessary we use that designation or the abbreviation CKNI. The financial year for each of the companies ends on 31 March.

Factors affecting the supply of, and demand for, Calor products

6.11. Apart from the general availability of supplies, which is discussed in Chapter 3, one of the main problems for any supplier is the seasonality of demand—particularly for butane. We estimate that about 60 per cent of all reference LPG is now sold as butane in cylinders of the 13–15 kg size predominantly used in mobile cabinet heaters. These appliances are, of course, brought into service in cold weather conditions. The onset and duration of such conditions are, however, notoriously difficult to forecast. For example, Calor told us that the tonnage of reference butane supplied in Great Britain in the third week in February 1980 was only 43 per cent of that supplied in the third week in January of that year, during which period the mean average temperature rose by 7°C.

6.12. Any supplier of reference LPG, therefore, has to endeavour to relate supplies—which have hitherto been chiefly derived from oil refinery operations which are continuous—to a demand which is markedly and unpredictably seasonal. Being a nationwide supplier Calor (unlike the smaller local suppliers) must, in addition, endeavour to respond to the widely varying climatic conditions which may exist in the several regions of the United Kingdom at any given time.

6.13. Calor told us that it seeks guaranteed minimum quantities of LPG in contracts negotiated with the major oil companies but that those quantities may be inadequate if winter weather conditions should prove to be worse than average. Seeking most of its annual requirements during only a few months of the year, a customer like Calor may be expected to be less attractive to oil refiners than one whose requirements remain at constant level throughout the whole year. When reference LPG is urgently required on a scale above the contracted level of purchases, Calor must necessarily seek additional supplies where they can be found.

Purchases

6.14. Purchases of LPG by Calor in the financial years 1975 to 1979 inclusive increased by over 50 per cent to something over half a million tonnes in the last of those years. All purchases conformed to the quality specifications prescribed in BS 4250 : 1975. In each of these years the purchases of propane included a quantity acquired for delivery at cost plus agreed charges to BOC Limited (for re-supply by that company in cylinders) in accordance with an arrangement under which Calor Gas Limited acquired BOC's business in bulk propane.

Sources of supply, filling plants and bulk storage facilities

6.15. Purchases of LPG in bulk are made by Calor from all the major oil companies—Shell, BP, Esso, Gulf, Mobil, Total, Texaco, Fina, Conoco, Burmah and BNOC. In addition, ICI is a supplier whilst purchases of some 5,000 and 44,000 tonnes (predominantly propane) were made on the 'spot' market in 1978 and 1979 respectively. Calor has eight filling plants in Great Britain and two in Northern Ireland at which the product is packaged into containers of the capacities referred to in the reference (see paragraph 1.1). Whilst the company has bulk storage accommodation for propane it has not yet succeeded in acquiring such facility for butane though it is making efforts to do so.

Sales of reference LPG

6.16. Somewhat less than one-half of sales by Calor are of LPG in bulk and are therefore outside the scope of our investigation. The total of sales of reference LPG by the two Calor companies (Calor Gas Limited and Calor Kosangas Northern Ireland Limited) for the years 1977, 1978 and 1979 were 199,995, 238,119 and 277,757 tonnes respectively. Sales by Calor Kosangas Northern Ireland Limited amounted to 28,042 tonnes in 1979. Butane now accounts for approximately two-thirds of the companies' sales by volume of all reference LPG. They have risen to that level from something over one-half in 1975. Save for aerosol propellant, of which a limited amount is supplied in cylinders,

LPG is sold by the Calor companies without its having undergone any process of conversion or modification since purchase by them.

Distribution arrangements

(*a*) *Contract sales*

6.17. Calor Gas Limited and Calor Kosangas Northern Ireland Limited supply a number of customers with their requirements of reference LPG on the basis of a contract (generally covering a three-year period). Such customers (termed 'contract' customers) undertake to purchase a minimum quantity annually (see also paragraph 5.18). Thirty customers accounted for some 47 per cent of all contract sales made by Calor Gas Limited in the calendar year 1979.

(*b*) *Other sales outlets*

6.18. Calor Gas Limited has appointed a number of main dealers each of whom is solely or jointly with another main dealer, dealer or Calor Centre responsible for the wholesale distribution of Calor products within a defined area. But their activities are not confined to wholesaling. They also supply reference LPG and appliances by retail from locations approved by Calor Gas Limited as being suitable for the storage and sale of those products. In addition, main dealers are responsible (subject to the approval of Calor) for the appointment of the appropriate number and type of retail stockists within their defined areas. In the year to March 1979, some 19 main dealers each bought over 1,000 tonnes of gas from Calor.

6.19. Dealers are selected by Calor from those retail outlets whose performance and potential as distributors of LPG and appliances are deemed by Calor to justify a status within their organisation higher than that of a stockist but below that of a main dealer. The dealer may, but is not required to, appoint stockists, subject to Calor's approval, and deliver products to them from locations approved by the company. New dealership appointments are now generally confined to distributors outside main dealer areas.

6.20. Approved stockists are appointed from retailers who can be expected *inter alia* to comply with prescribed standards of safety and to provide ready availability of Calor products to retail customers.

6.21. In addition to the foregoing, the company has established a number of Calor Centres with functions (including the appointment of stockists) similar to those of main dealers. Each Calor Centre has a showroom and sales staff and, although directly owned by the company, is required to operate, in effect, as if it were a main dealership—the internal transfer prices for gas and appliances being the same as those charged to main dealers.

6.22. In the year to March 1979 70·5 per cent of Calor's sales of reference LPG within Great Britain was made to dealers, 22·1 per cent was made to Calor Centres and 7·4 per cent was made direct to contract customers. (The

term dealers is here used to include dealers *per se*, main dealers and stockists.) At March 1980 the number of Calor's distribution outlets of various sorts was, in Great Britain, a little over 9,000 and in Northern Ireland about 530.

6.23. The distribution arrangements operated by CKNI are essentially similar to those operated by Calor in Great Britain except that there are no separate stockists. Dealers in Northern Ireland sign a 'Dealer Stockist Agreement'. In the year to 31 March 1979 they accounted for 89 per cent of all CKNI sales of reference LPG in that Province. Contract sales accounted for 4·3 per cent, the balance being supplied by Calor Kosangas Centres of which there are at present six.

(*c*) *Restrictions on Calor distributors' operations*

6.24. In paragraph 4.13 reference has been made to a restriction in distributorship agreements which precludes the supply of Calor's brand of LPG if intended for use in appliances which have not been approved as conforming to BSI or Calor's safety standards. In addition, there are restrictions which preclude Calor distributors (main dealers, dealers and stockists) from being concerned in the supply of LPG other than the brand marketed by Calor during the currency of those agreements. In Chapter 8 we deal with this exclusivity provision both as regards Calor and certain other suppliers of reference LPG.

6.25. Calor's agreements with its distributors have recently been modified in certain respects. The old agreements, *inter alia,* contained a binding out provision restricting distributors from supplying other brands of LPG for a prescribed period after termination of their agreements with Calor. We have been assured by Calor that it is not its policy to seek to enforce any of the old agreements in so far as they include terms more onerous than the terms of the new agreements and that distributors still operating under the old form of agreement in which the binding out condition appears, have been informed that it will not be enforced. A company respresentative told us that the arrangement has in practice been a dead letter for many years—to his knowledge certainly for at least ten years.

6.26. We reproduce at Appendix 4 the restrictive clauses of (i) the old and (ii) the new forms of agreements as operated by Calor in Great Britain and at Appendix 4(*a*) the restrictive clauses of the dealer/stockist agreement as operated by CKNI in Northern Ireland.

Purchase of containers

6.27. LPG refillable containers in sizes of between 4·5 kg and 47 kg were purchased by Calor Gas Limited from manufacturers in the United Kingdom, Italy, France, and Thailand in the year ended March 1979. Their total value was £7,860,000. In addition, the company acquired small quantities of refillable containers in sizes of between 340 grams and 2 kg from Primus Sievert AB of Sweden at a total cost of £32,000 and small quantities of disposable cartridges

from Boxal Nederland BV and The Crown Cork Company Limited at a total cost of £42,310. CKNI purchased containers of 11·34 kg (25 lb) capacity from Italian and Czechoslovakian suppliers at a cost in 1978–79 of £372,626.

6.28. Under an arrangement made with BP (International) Limited in 1975 Calor Gas Limited acquired a number of 7 kg aluminium containers for the marketing in the United Kingdom of 'Caravangas'. With this exception, all refillable containers used by Calor are made of steel and conform to the specification in BS 5045: Part 2: 1978 (see paragraph 4.8). (The 7 kg aluminium container was approved in 1976 by the Explosives Inspectorate of the Health and Safety Executive and complies with the specification in BS 5045: Part 5 which is in course of preparation.)

Calor Laboratories appointed as Inspecting Authority for gas containers

6.29. As indicated in paragraph 4.8 the Health and Safety Executive appoint Approved Inspecting Authorities for the purpose of supervising and inspecting the manufacture of transportable gas containers for use within the United Kingdom. Calor Gas Limited, Central Laboratories, Addlestone, Surrey have been so appointed.

Calor Laboratories as a listed BSI Test House

6.30. In addition Calor Laboratories have been listed by BSI as the only Test House of Assessed Capability for LPG burning appliances (see paragraph 4.11). In this connection BSI told us of the importance which they attach to ensuring, in so far as this is possible, that listed Test Houses shall operate totally independently of any commercial interests. They explained that, in the case of Calor Laboratories' application, BSI inspectors visited the premises to satisfy themselves that the Laboratories are physically separate from Calor's marketing/commercial divisions; that the arrangements for dealing with correspondence and record keeping are under the sole control of the Laboratories' staff and that, so far as they could establish it, the Laboratories are in a position to operate in a genuinely autonomous manner. After listing, BSI practice is to make four unannounced surveillance visits per annum to satisfy themselves that the position regarding autonomy and confidentiality of Test Houses remains satisfactory.

6.31. In dealing with complaints (see Chapter 9) made to us that Calor Laboratories do not invariably operate wholly independently of Calor's commercial interests, the company told us that between April 1977 and June 1980 priority had been given in 31 instances (out of a total during that period of 1,719 assignments) to the testing of particular appliances. Priority had in each case been given at the request of the Calor commercial/marketing department and on the authority of the managing director of Calor Gas Limited. We reproduce at Appendix 7 an extract from a letter from Calor listing the instances and indicating the reasons for according priority to them. The reasons given include such considerations as innovative design; that barbecues were required

for the summer season; that the appliances were required to fill gaps in the product ranges of appliance manufacturers or that the requests for priority had been made by BSI.

6.32. Among the provisions governing the listing of Test Houses by BSI is the following:

'15. No claim, direct or implied, shall be made by the Test House that registration relates to any services other than those set out in the Certificate of Registration and the Schedule. The Test House may use in documentation, brochures or advertising media, without variation, the phrase "Listed in the BSI Register of Test Houses of Assessed Capability".'

6.33. In advertising appliances, Calor often refers to appliances as having been tested and approved for safety and performance in its laboratories 'which are specially recognised by the British Standards Institution for testing such products'. We asked Calor whether this form of advertising had been agreed with BSI. We were assured that it had been so agreed but in subsequent correspondence with the company it emerged that BSI's agreement had been assumed because no objection had been raised by them to it. (This form of advertisement was used, for example, in marketing certain mobile heaters before BS 5258: Part 10, was published.) We have now been informed that in future publicity material issued by Calor Gas Limited only the phrase 'Listed in the BSI Register of Test Houses of Assessed Capability' will be used if reference is made therein to the Laboratories.

Cylinder valves, regulators and adaptors and agreements concerning their supply

6.34. LPG cylinders supplied by Calor are directly interchangeable with the LPG cylinders of other suppliers of reference LPG but in certain circumstances the user may require an adaptor or a different regulator from that used when an appliance is connected to a Calor cylinder (see also paragraph 5.22).

6.35. Calor's propane and butane cylinders, other than the butane 7 kg and 15 kg sizes, have standard side-entry valves and are thus directly interchangeable with cylinders of equivalent size and type of other suppliers of reference LPG. Calor's 7 kg and 15 kg cylinders are fitted with 21 mm top-entry valves with 'clip on' regulators. The 15 kg cylinder is that predominantly used by Calor in supplying reference butane in Great Britain. The interchangeability of these cylinders is dealt with below.

6.36. The cylinders acquired from BP International Limited were fitted with top-entry valves of 21 mm size which incorporated a pressure-relief device manufactured by Kosan A/S, Denmark. Hence, when the Home Office expressed concern that Calor's butane cylinders of the type used with cabinet heaters should incorporate a pressure-relief device, the company decided to fit all such cylinders used by it with that type of valve. The regulator used with such valves is of the clip-on type. The effect of so doing is that for new appliances to which a regulator of the kind required for 'clipping-on' to the 21 mm valve is attached,

the only cylinders directly interchangeable with the Calor 7 kg or 15 kg butane cylinders are those incorporating a 21 mm valve of the same type unless the user changes the regulator and fits one compatible with the valve used in the other cylinder. As regards old appliances, where the regulator is of the kind compatible with the former side-entry valve, the Calor 7 kg and 15 kg butane cylinders are not capable of being used unless the user acquires an adaptor which serves as an interface between the new cylinder and the old regulator.

6.37. Among suppliers who have adopted top-entry type valves on their butane cylinders we were unable (in early 1980) to identify any other than Calor who, in Great Britain, had adopted a 21 mm diameter Kosan valve. For the most part all other suppliers use a 20 mm valve though at least one supplier in Great Britain (Shell) is in the process of fitting its butane cylinders with a valve of 27 mm diameter with a snap-on regulator.

6.38. In February 1976, when the company was organising its cylinder conversion programme, Calor Gas Holding Company Limited entered into two agreements with Kosan A/S of Denmark under which Calor 'agreed to acquire very substantial quantities of 21 mm valves, regulators and adaptors'. In one of these agreements Kosan agreed 'to grant Calor a manufacturing right for the balance of valves required by Calor for their conversions (ie in addition to the 1·5 million valves ordered by Calor) as well as a right to continue producing these valves, including the exclusive right to sell these valves also to other parties for use exclusively in the United Kingdom and the Republic of Ireland for a period of 25 years from the date of this Agreement'.

6.39. The parties also agreed that Kosan would be entitled to supply certain 'established customers' in the United Kingdom with their own requirements. (The scale of these customers' requirements was small.)

6.40. In November 1977 Calor announced to other suppliers of LPG that it was waiving its rights to exclusivity, though no formal variation was made to the Kosan agreement. Notwithstanding such waiver by Calor, we have been informed by certain other suppliers of reference LPG that Kosan remained unable to supply them with 21 mm valves and associated regulators though we understand that Kosan began advertising the general availability of the regulators in about May 1980. In July 1980 Calor informed us, with reference to its right to manufacture Kosan 21 mm top-entry valves, that it was willing to sell these valves to other LPG suppliers but had, in fact, succeeded in selling only small quantities.

6.41. In Northern Ireland CKNI uses, for the most part, on its butane cylinders a 1 inch Kosan Jumbo valve with clip-on regulator. (Other suppliers in the Province use either a 20 mm or 27 mm valve system.) This valve was already in use when Calor acquired LPG Limited in 1971 (see paragraph 6.5).

6.42. Whatever effect Calor's exclusive arrangement with Kosan for the supply of 21 mm top-entry valves and regulators may have had, it is clear that whilst, before introduction of top-entry valves on butane cylinders, side-entry valves were of standard size (21·7 mm), there is now a diversity of sizes and types of butane valve systems in use in the United Kingdom.

LPG burning appliances and matters concerning their supply

6.43. Calor Gas Limited is a major supplier of LPG burning appliances in Great Britain. Its sales of such appliances in the year to March 1979 amounted to £22,148,000. (The company's sales of reference LPG in that year were £55,137,000.) These appliances included cookers, space heaters, water heaters, barbecues, camping and leisure appliances, torches and burners. Out of Calor's total space heater sales in Great Britain of 352,000 units, mobile cabinet heaters accounted for 303,000 units in the year to March 1979. The latter figure is thought to represent about 60 per cent of all cabinet heaters sold in Great Britain in that year. In the same year CKNI supplied about 22,700 cabinet heaters as well as other space heaters, cookers etc in Northern Ireland.

6.44. Calor Gas Limited purchases its requirements of appliances from a wide range of suppliers (including Calor Engineering Limited—see paragraph 6.6). In the year 1978–79 purchases of space heaters were made from 34 suppliers and of cookers from ten suppliers. Super Ser (UK) Limited is Calor's main supplier of cabinet heaters. CKNI also bought its requirements from some of those suppliers in 1978–79.

6.45. Calor has agreements with certain manufacturers/distributors which confer rights on the company to market certain LPG burning appliances (almost totally cabinet heaters) on an exclusive basis. The manufacturers/distributors concerned in these arrangements are, or were, Super Ser (UK) Limited, Valor Heating Limited and Domestic Industrial Pressings Limited.

6.46. The arrangement with Super Ser (UK) Limited involved total exclusivity of heater types and brand name and is said to have evolved with mutual agreement from 1970 when both companies pioneered the cabinet heater market. This arrangement is now at an end. (In the year 1970–71 Calor sold all the cabinet heaters—15,000—supplied in Great Britain.)

6.47. An exclusive arrangement was concluded subsequently between Valor Heating Limited and Calor in respect of one model of cabinet heater.

6.48. Domestic Industrial Pressings Limited (DIP) and Calor also have an agreement whereby exclusivity for DIP's range of heaters is held by Calor. This exclusivity relates only to the use of the name of the heater.

6.49. One model of cooker manufactured by the Glynwed Group is sold exclusively through Calor as an own brand cooker. (Advertising material for this cooker says that it is 'Suitable for Calor Gas only'.)

6.50. In addition, Calor enters into certain launching arrangements conferring short-term exclusivity on the company for the distribution of certain appliances. None of the arrangements concerning exclusivity of appliances is, we are informed, the subject of any written agreement.

6.51. Calor informed us, in connection with the marketing of LPG burning appliances through its distribution network, that 'if [an] appliance has not been approved by Calor under the standard test procedures adopted at Addlestone, Calor's dealers are expressly prohibited from stocking it and reselling it for use with Calor's reference LPG'.

6.52. The company has told us that it is now 'a matter for each manufacturer of an appliance that has received Calor approval at the Addlestone Testing Laboratories, to decide how to distribute that appliance, whether to entrust the bulk of the work of marketing, sales and distribution to Calor or market in competition with Calor or both . . . '.

6.53. The 'Calor Gas Approved Badge', to which reference has been made in paragraph 4.14, appears to be of the nature of an unregistered seal of approval. In the Final Report of the Committee on Consumer Protection (Cmnd 1781) published in 1962 it was recommended that, where an unregistered seal of approval is used for the purpose of seeking to advance sales, such use should be made an offence, save in certain exceptional circumstances. Although this recommendation has not been implemented the Trade Descriptions Act 1968 offers some protection against the use of false claims by users of unregistered seals of approval. We have no grounds for assuming that the Calor Badge is, in itself, misleading in any respect. Our concern is whether its use leads to any restriction or distortion of competition in the LPG appliances market bearing in mind that certain products which are, we believe, in every respect identical to 'Calor Approved' products in their manufacture (though they do not qualify for the dealer checking and service support referred to in the Badge definition) are not entitled to bear the 'Calor Gas Approved Badge'. There is also the wider question as to how far it is appropriate that an appliance manufacturer should find it necessary to seek from Calor Laboratories confirmation that his product conforms to British Standard(s) if he wishes to market it either partially, or wholly, through other than Calor outlets. It should be said that these considerations arise because of (*a*) Calor's predominant position in the LPG appliances market, and (*b*) the company's unique position in that its Central Laboratories enjoy the status of a BSI listed Test House, indeed the only one exercising a regulatory function in the LPG appliance field. One appliance manufacturer who complained about these matters to us remarked as follows:

> '. . . the reason for us applying for Calor Gas approval of our appliances . . . is that their [Calor's] power of marketing and indoctrination of the LPG market would not make it viable for us to introduce the appliances because a mere statement that "it is not approved by Calor Gas Limited" will immediately put a retailer off from stocking such an item, because, . . ., Calor Gas Limited are the only company that have a test house capable of approving such appliances and their word has tended to become law . . . '

Appliances sold by discount and mail order suppliers

6.54. A comparatively recent development in the LPG burning equipment market is the sale of mobile cabinet heaters through certain discount and mail order houses. In some instances the product so supplied is 'Calor Approved' and is accompanied by a voucher entitling the purchaser 'to a free full inspection for safety and performance by an Authorised Calor Gas Dealer who will also supply you with a cylinder and first fill of gas . . .'. (Such products are not entitled to bear the Calor Gas Approved Badge.) The text of related advertisements makes it clear that payment of the hire charge for the cylinder and the fill of gas must be made to the dealer. In other instances some products supplied by discount and mail order houses have not been 'Calor Approved'.

Product liability

6.55. Calor holds a public/products liability policy which indemnifies the company and all its duly appointed dealers and stockists against all sums which it shall become legally liable to pay for compensation in respect of certain damages to life or property as a result of an occurrence happening in connection with its business and caused by, or as a consequence of, any Calor gas or Calor approved equipment or any work executed by or on behalf of a dealer or stockist in connection therewith. In agreements with its main dealers and dealers it is expressly stated that 'For the purpose of clarification the company will not accept liability . . . if the equipment is not Approved and/or supplied by the company or Approved equipment is being used with gas other than that supplied by the company'. (For definition of 'Approved' see paragraph 4.13.) CKNI requires its dealers to hold a policy of insurance against liability to third parties and public liability for loss or damage arising from accident or negligence arising from performance by the dealer of his agreement with the company and in connection with his business up to a liability of £100,000 for any one claim.

Pricing policy

6.56. Calor describes its business (which includes the supply of both bulk and reference LPG) as that of 'a wholesaler, but a wholesaler of a quite exceptional type'. The distinctive feature of the business is said to be that whilst it has little control over the cost of the major product (ie LPG) it seeks to have, and does have, a considerable influence on total demand for it, the level of which has been directly affected by its capital investment and marketing policies. As regards reference LPG, the company's policy of marketing mobile cabinet heaters has, in recent years, been the major factor in influencing demand for that product (in the form of butane).

6.57. The company points to the cost to it of LPG at the refinery and says that this element in its cost structure has always dominated its prices. It has also pointed out that as regards butane, for example, there are alternative uses to which that product can be put (eg as a substitute for naphtha in the petrochemical industry) and for which the oil refiners can obtain attractive prices.

However, in order to maintain the momentum for growth which the company has achieved in recent years, it says that the full effect of increased ex-refinery prices has had to be moderated by accepting a reduction in the company's trading margins. The aim is, the company says, to provide a reasonable return on capital and to stimulate market growth without making the 'wholesale profit' so attractive as to invite new entry or expansion of existing competitors' operations. Additionally it does not seek, it is claimed, to exploit its strong position in sparsely populated areas as is evidenced by the adoption of national prices for its products except that in certain Scottish Islands and the Isles of Scilly a dock handling and sea freight charge is added to such prices.

6.58. The marketing of reference LPG necessarily involves costs *inter alia* in providing and maintaining cylinders, filling plants, distribution depots and transport. And, as regards cylinders, Calor emphasises the major capital investment which it has made in providing enhanced safety and other improvements in recent years.

6.59. In pricing its reference products, Calor told us that all the foregoing considerations have to be taken into account against the background of factors over which the company can have no control. These include the prices of alternative fuels and government policy in regard to them. In referring to the latter, the company remarked that its growth in 1976 and 1977 (when annual increases of 35 per cent in sales of cylinder butane were achieved) can be ascribed to the decision of government to withdraw the subsidy on domestic electricity charges and that, rather than follow the increase in electricity prices, it decided to maintain a differential in favour of reference LPG. As regards the increasing number of small suppliers whose main competitive weapon is price, Calor claims that it continually seeks to meet this circumstance by improving the quality of the service it provides.

6.60. Calor says that all these factors are relevant in relation in general to the comparative price/performance of LPG and that it has continually to recognise them. However, as regards the pricing of the smaller butane cylinders which are used traditionally in leisure pursuits, different considerations are said to apply. In this sector of the market it is said that 'the cost of an exchange cylinder of butane is one of the least important costs incurred by the holiday-maker, whose primary concern is the availability of exchange cylinders'. Accordingly, Calor prices such products so as to maintain a significant differential in its favour as against comparable products marketed by Camping Gaz (GB) Limited (see paragraphs 5.12 and 7.4 (iii)) and 'so as to achieve an appropriate contribution from these (leisure) users to the costs of establishing and running a system of distribution which, in effect, guarantees this availability of exchange cylinders throughout the country'.

6.61. Calor says that the reactions of consumers to the levels of price of 15 kg cylinders (of butane), and to changes in that price 'over the past five years have been the most positive and striking acknowledgement of the value for money

of "LPG in appliances" as compared with other forms of energy' and added that 'price increases on smaller cylinders . . . have not inhibited demand'.

Discounts, rebates and allowances

6.62. Calor's structure of price discounts reflects the structure of its distribution network, except that for discount purposes there are four categories of 'Dealer'. These are, in Great Britain, described as Full Dealer 1, 2, 3 and 4. Their respective functions and distinctive characteristics are as shown hereunder.

(*a*) *Full Dealer 4* is required (i) to accept full loads, or slip trailers, of reference LPG from Calor during 24 hours per day including weekends and to maintain storage throughout the year at levels required at periods of peak demand; (ii) to supply reference LPG to stockists appointed by the dealer and (iii) to provide a full delivery service to customers.

(*b*) *Full Dealer 3* is required to provide services listed at (*a*)(ii) and (iii) above. Deliveries to these dealers are made direct in part loads.

(*c*) *Full Dealer 2* is required to provide the service at (*a*)(iii) above. Deliveries to these dealers are made by Calor in part loads.

(*d*) *Full Dealer 1* (like all other dealers) is required to comply with the terms and conditions of his contract with Calor including stocking of a range of appliances and employing technical support staff approved by Calor.

6.63. A *Sub-Dealer* is in effect a stockist who, for reasons connected with his location, acquires reference LPG direct from Calor and accounts directly to Calor.

6.64. The discounts, expressed as percentages off recommended maximum retail prices, are as shown below for each class of dealer in respect of reference LPG supplied by him in cylinders of all sizes other than certain small cylinders (Calor Primus and Calor Dex which have capacities 0·34–1·95 kg and 0·45 kg respectively).

Main Dealer	33 per cent
Full Dealer 4	30 per cent
Full Dealer 3	29 per cent
Full Dealer 2	27½ per cent
Full Dealer 1	25 per cent
Sub-Dealer	17½ per cent

On small cylinders (see above) main dealers are given 50 per cent and all full dealers and sub-dealers 33 per cent discounts off recommended maximum retail prices for such products.

6.65. Discounts, expressed as percentages off recommended maximum retail prices and based on annual tonnages purchased, are for the year to 31 March 1981 allowed to stockists on the following scale.

Annual purchases	*Discount (per cent)*	
	Winter purchases	*Summer purchases*
Less than 15 tonnes	15	17½
15–60 tonnes	17½	20
Over 60 tonnes	20	22½

A stockist collecting his purchases from a Calor Centre obtains an additional 5 per cent discount and Calor has recommended to its dealers that they should give the same amount to stockists collecting supplies from them.

6.66. All Calor dealers in Great Britain who have been dealers for one full year prior to 1 April in each year are eligible to take part in a Dealer Incentive Rebate Scheme. The rebate for the year to March 1981 is 3 per cent (5 per cent between April and September) of total gas turnover and 1 per cent of appliance turnover. Qualifying conditions require dealers to have participated fully in national sales promotion campaigns including participtation in 50/50 local advertising support, where appropriate; to have co-operated fully in maintaining appropriate stocks of full cylinders; to have achieved increases in total cylinder gas and appliance sales and to have complied satisfactorily with Calor's terms of trading.

6.67. In addition there are provisions for rewarding contract customers who achieve specified annual cylinder turnround rates and for granting an introductory commission to mechanical handling equipment manufacturers and distributors who supply new or replacement equipment, together with Calor cylinders, to an existing Calor contract customer or which results in a new Calor contract being signed. This arrangement applies in Great Britain only.

6.68. CKNI issues its own recommended retail price lists which are not subject to variation within the Province. Dealers in Northern Ireland are allowed a discount of about 18 per cent off those prices. Two of the six Calor Kosangas Centres in Northern Ireland operate on a franchise basis with the concessionaires being given a discount of some 11 per cent.

Supply of LPG containers

6.69. All refillable Calor cylinders remain the property of Calor at all times. The property in disposable containers ('cartridges') passes to the purchaser on sale.

6.70. No charge is made by Calor for its Calor propane, Calor butane or Calor Dex cylinders supplied to its distributors, provided that those distributors comply with the terms of their agreements governing the control of stocks of cylinders. If a deficiency or an excess is found in a distributor's stock of cylinders he is liable to pay compensation to Calor in respect of the former and to receive payment from Calor in respect of the latter. (The bases for such settlements are notified to its dealers by Calor.)

6.71. Calor Primus (refillable) cylinders are generally supplied to dealers on the basis of exchange of a full cylinder for an empty cylinder. But in cases where a distributor requires a supply of Primus cylinders he is invoiced the full charge for the cylinders (including its contents) less the appropriate discount, when he places the order.

6.72. The user, on first acquiring gas and the use of the cylinder containing it, is required to sign a Cylinder Refill Authority Agreement (Form 167)—see Appendix 3—and pays charges (in addition to the cost of the gas) which, excluding VAT, were in July 1980 as follows:

Calor propane/butane cylinders of all sizes from 3·9 kg and over	£16·00
Calor Primus (propane) Type 2000 (0·34 kg)	£9·00
Type 2012 (1·95 kg)	£12·22

Clause 7 of the Form 167 Agreement provides for refund to the customer of a percentage of the refill authority charge in certain circumstances. CKNI's arrangements are generally similar, the charge for a 25 lb butane cylinder being £10·87 (excluding VAT).

6.73. Contract users are allowed two months' free loan of all cylinders. Each cylinder held beyond that period is charged 10p per month, or part of a month, during the period April to September and £1·50 per month, or part of a month, during the period October to March. Any such charge is raised monthly but is credited back to the customer at the end of his contract year if he earns a rebate on total gas consumed on account of a high cylinder turnround rate as shown below. The gas rebate (in July 1980) was:

2·10p/kg for a winter period (ie, October to March) cylinder turnround rate of 6 and over;

1·40p/kg for a winter period cylinder turnround rate of 5—under 6; and

0·70p/kg for a winter period cylinder turnround rate of 4—under 5.

Cylinders not accounted for by the contract customer are charged for.

6.74. As regards LPG supplied by Calor for use in internal combustion engines where these engines are in vehicles for use on the public highway, such vehicles are fitted with refillable cylinders ('autotanks') and these cylinders are filled from bulk storage vessels supplied by Calor. (LPG supplied by Calor for this purpose has the trade name 'Autoblend'.) Where the internal combustion engine is in a vehicle, such as a fork lift truck, for use other than on the public highway, the user has a choice of three methods of supply. Under the first of them he can, provided he has suitable facilities for storage vessels, acquire bulk storage vessels and autotanks from the company and fill the autotanks with LPG supplied by Calor and held in the bulk storage vessels. Such autotanks are generally of 33 lb capacity. The user pays a quarterly rental charge for the autotank. Secondly, the user can opt for a contract for cylinders which includes the standard demurrage charge as outlined in paragraph 6.73. Thirdly, the user can obtain his exchange cylinders on a Form 167 Agreement through the Calor dealer network (see paragraph 6.72).

Delivery charges

6.75. A cylinder domiciliary delivery charge is made (mid-1980) by Calor at the rate of 39p (excluding VAT). And, for contract customers, an annual charge of £40 (excluding VAT) payable quarterly is raised on every site to which reference LPG is delivered except where all gas consumed on that site is collected from a retail outlet.

Prices and price movements

6.76. In the period from 1 April 1974 to 31 January 1980, the General Index of Retail Prices rose by about 139 per cent. In the same period the average cost of bulk butane purchased by Calor rose by 209 per cent (from £40·85 to £126·24 per tonne) and that of bulk propane by 184 per cent (from £41·45 to £117·89 per tonne). It was in about January 1980 that the price of bulk butane first exceeded that of bulk propane.

6.77. During the period 1 April 1974 to 31 January 1980 Calor increased the recommended retail sale prices of some or all of its reference LPG products, as supplied in Great Britain, on 13 occasions and, as supplied in Northern Ireland, on 11 occasions. The following examples (which relate to products when supplied in refillable containers of capacities in greatest demand) show the cumulative effect of these increases in both parts of the United Kingdom. (Where a particular capacity of container is not supplied in an area this is indicated in the subjoined table.)

TABLE 6.1 **Price increases for Calor products from 1 April 1974 to 7 January 1980**

Per cent

Capacity of refillable container	*Great Britain*	*N. Ireland*
	Butane	
4·5 kg (10 lb)/4·54 kg	132	112
11·3 kg (25 lb)	N/A	157
14·5/15 kg (32 lb)	164	N/A
	Propane	
0·34 kg (¾ lb)	105	35
0·82 kg (1⅘ lb)	87	35
1·92 kg (4¼ lb)	66	35
3·9 kg (8½ lb)/3·86 kg	121	99
10·88 kg (24 lb)	N/A	148
13 kg (29 lb)/13·15 kg	133	148
19 kg (42 lb)	140	149
47 kg (104 lb)	136	145

6.78. The price of a 0·23 kg (½ lb) disposable cartridge of butane as supplied by Calor increased, in Great Britain, by about 117 per cent between 1 April 1974 and 7 January 1980 whilst in Northern Ireland the increase was some 66 per cent. For the 0·45 kg (1 lb) cartridge the increase in Great Britain was 151 per cent and in Northern Ireland 77 per cent.

6.79. Taking Calor's recommended retail prices at 1 July 1980 as the basis, the following table shows the price in pence per lb of LPG when supplied to users in containers of different capacities.

TABLE 6.2 **Calor's recommended retail prices for LPG when supplied in certain sizes of container as at 1 July 1980**

£ (to nearest ½p) per lb

	Butane	
	Great Britain	*N. Ireland*
Size of container		
4·5 kg (10 lb)	0·33½	0·27½
11·3 kg (25 lb)	—	0·19½
15 kg (32 lb)	0·20½	—
	Propane	
3·9 kg (8½ lb)	0·33	0·30
13 kg (29 lb)	0·19½	0·19½
47 kg (104 lb)	0·18	0·18

Revenue, costs and returns in respect of reference LPG supplied in certain cylinders

6.80. Calor has provided the following information showing for the year ended 31 March 1979 the average revenue and costs directly associated with refilling reference LPG cylinders of the three sizes most widely used. The following table indicates that the respective average wholesale price charged in 1978–79 for each of these three cylinders provided a return on fixed assets which did not vary greatly from one cylinder size to another. The three cylinder sizes examined accounted for over 82 per cent of cylinder LPG sales by Calor.

TABLE 6.3 **Calor Gas Limited. Revenue and direct costs per tonne of LPG when supplied in certain cylinders: averaged for the year 1978–79**

per tonne

	Butane		*Propane*
Cylinder size	4·5 kg	15 kg	47 kg
Wholesale price	£392·20	£201·95	£200·87
Cost of gas*	81·81	81·81	91·97
Production and distribution costs†	147·75	57·95	50·87
Cylinder depreciation‡	68·10	13·12	9·93
Total direct costs	297·66	152·88	152·77
Gross gas margin	94·54	49·07	48·10
Overheads net of cylinder hire revenue	28·64	28·64	28·64
Net margin	65·90	20·43	19·46
Fixed assets§	490·08	157·28	116·19
Return on fixed assets	13·4%	13·0%	16·7%

* Average gas purchase price including delivery and storage costs.

† The majority of production costs have been allocated on work study standards set for the various operations necessary in connection with each cylinder size. Cylinder maintenance costs have been allocated by specific cylinder size, as has depreciation of certain specific plant used for only one cylinder size. Distribution costs have been allocated on a weight basis assuming a full outwards and return load for each journey.

‡ This item covers the allocation of the historic depreciation charge analysed by separate cylinder categories and includes all cylinders in the system whether held by a customer or forming part of the back-up requirement. The higher depreciation charge per tonne for smaller sized cylinders is a consequence of two factors, the first being the greater capital cost of smaller cylinders relative to the gas contained therein; and the second being the lower number of refills per annum requested by holders of smaller cylinders. The overall result is that the depreciation charge per tonne for 4·5 kg cylinders is five times greater than that for 15 kg cylinders.

§ Fixed assets comprise the historic written down value of all cylinders within the system together with a proportion of the production plant.

Trading performance

6.81. Details of Calor's trading results for each of the years 1975–79 are shown in Appendix 5. They are summarised in the following tables:

TABLE 6.4 **The Calor Group Limited: trading results relating to the supply of reference LPG**

	1975	*1976*	*1977*	*1978*	*1979*
			£m		
Sales of gas and other revenue	20·9	29·5	41·0	53·8	64·6
Net profit before interest (historic cost basis)	3·7	6·4	7·0	6·8	9·3
Net profit before interest (CCA basis)	N/A	N/A	4·5	3·9	6·6
Net profit return on sales			*per cent*		
(*a*) Historic cost basis	12	16	12	9	11
(*b*) CCA basis	—	—	8	5	8
Net profit per tonne of gas	£25·49	£38·79	£34·80	£28·46	£33·62

Returns on capital employed for the same period are shown in Appendix 6 and are summarised below in respect of the supply of reference products including directly related activities (eg the supply of LPG burning appliances).

TABLE 6.5 **The Calor Group Limited: return on capital employed in supplying reference LPG**

	1975	*1976*	*1977*	*1978*	*1979*
(1) Capital employed on book value basis (£m)	24·3	25·3	31·2	44·7	58·1
Return on above (%)	15	25	22	15	16
Average over five years			19		
(2) Capital employed on CCA basis (£m)	—	—	51·7	61·0	75·3
Return on above (%)	—	—	9	6	9
Average over three years (%)				8	

There were no significant transfers of products or services between The Calor Group Limited and its parent IC Gas and we are satisfied that no payments were made between them such as would materially distort the profit rates shown above.

6.82. Examination of the results for the financial year to March 1980 indicated that for the Group as a whole and for its Gas Division there was no material change from the results for the previous year. There are no grounds for assuming that the profit rate on capital employed in supplying reference LPG varied significantly during those years.

Source and application of funds

6.83. Details of the source and application of funds employed by The Calor Group Limited in the years 1976–79 are set out below. Although the details suggest that no additional finance was required to cover commitments during the period additional financing of between £7 million and £12 million would have been required to cover a contribution of £10–15 million in respect of interest, taxation and dividends.

TABLE 6.6 **The Calor Group Limited. Source and application of funds for reference products**

			£m			
Year ended 31 March	*1976*	*1977*	*1978*	*1979*	*Total*	*as a percentage*
Source of Funds						
Funds available from profit before interest	6·6	7·2	7·0	9·5	30·3	49
Add back depreciation	3·4	4·5	4·8	6·8	19·5	31
Net funds generated internally	10·0	11·7	11·8	16·3	49·8	80
Increase in deferred cylinder revenue	2·2	2·2	3·7	4·6	12·7	20
Total funds provided	12·2	13·9	15·5	20·9	62·5	100
Application of funds						
Increase (decrease) in working capital	(1·0)	3·5	2·4	3·6	8·5	13
Net additions to fixed assets (see paragraph 6.84)	6·6	10·4	17·6	14·5	49·1	79
Increase in deferred assets	—	—	1·9	—	1·9	3
Total funds applied	5·6	13·9	21·9	18·1	59·5	95
Increase (decrease) in net liquid funds	6·6	—	(6·4)	2·8	3·0	5

Major items of capital

6.84. Capital expenditure incurred by The Calor Group Limited in supplying reference LPG in the financial years 1975–79 is analysed below. (Items relating to distribution are excluded.)

TABLE 6·7 **Capital expenditure incurred by The Calor Group Limited in relation to the supply of reference LPG**

			£m			
Year ended 31 March	*1975*	*1976*	*1977*	*1978*	*1979*	*Total*
Production plants	0·2	0·2	2·3	2·9	3·4	9·0
Calor centres	0·5	0·1	0·4	0·5	0·8	2·3
Cylinders	4·1	4·8	6·5	12·7	8·2	36·3
Other	—	1·5	1·2	1·5	2·1	6·3
Totals	4·8	6·6	10·4	17·6	14·5	53·9

Statement of value added

6.85. The following statement of value added is given in respect of Calor Gas Holding Company Limited and its subsidiaries (which in addition to Calor Gas Limited and Calor Kosangas Northern Ireland Limited includes Calor Engineering Limited) for each of the five financial years 1975–79.

TABLE 6.8 **Calor Gas Holding Company Limited. Value added calculation**

			£m		
	1975	*1976*	*1977*	*1978*	*1979*
Employees remuneration*	16·3	19·7	21·5	26·8	31·4
Operating profit†	11·6	14·4	17·6	21·3	26·1
Value added	27·9	34·1	39·1	48·1	57·5
Average number of employees	4,814	4,620	4,450	4,820	4,736
Value added per employee	£5,796	£7,381	£8,787	£9,980	£12,141

*Wages, salaries, NI and similar contributions, pensions etc.
†Before interest paid and depreciation, but net of interest received and sundry other net profits/gains.

Future pricing and profitability

6.86. Noting Calor's policy of pricing its reference products below those of electricity (see paragraph 6.59), we asked the company whether, if the price of electricity increased by, say, the rate of inflation plus 10 per cent (this being the increase said to represent government policy in this connection), it would follow a similar pricing pattern. The reply was that such circumstances would give Calor more flexibility to increase profitability or to achieve a wider margin of advantage over electricity. And, as regards competition with mains gas, the company could not envisage circumstances in the next 10–15 years where (particularly given the convenience advantages of mains gas) there would be any significant changeover to LPG. However, there would probably be some movement in that direction in so far as more people, whose homes are equipped with mains gas central heating, would be likely regularly to use LPG as a means of heating, say, a single room for a short period daily rather than by using the central heating system for that purpose.

6.87. Having regard to the levels of profit which the company has made in recent years and bearing in mind that (*a*) substantial capital outlays had been made in those years (£6 million for its new butane cylinder valve system and £36 million for increased stocks for cylinders in the years 1975–79) and (*b*) the winters during the period had, for the most part, been unusually mild, we asked whether profit levels were not likely to increase substantially in future years when more normal circumstances might be expected to obtain. In reply the company pointed (in July 1980) to the mild weather of April 1980 which had already adversely affected the present year's operations and remarked that, since the company was acquired by IC Gas about 11 years ago, the sum of £140 million had been spent on investment and it was intended to spend a further £35 million in the current year. In the years ahead substantial sums would be invested in providing butane storage facilities to help in maintaining supplies to users whatever the weather conditions might be. Such circumstances, it was suggested, would tend to keep profitability at modest levels in future years.

CHAPTER 7

Other suppliers

7.1. In this chapter we deal with reference LPG suppliers other than Calor ('other suppliers'). In doing so we note the extent of their involvement in the market and identify practices adopted by individual participants which may be regarded as in some way relevant to the question of competition in the supply of reference LPG in the United Kingdom.

7.2. Of the four major suppliers referred to in paragraph 5.7 and Table 5.2, the activities of two of them (the Calor companies) have been examined in detail in Chapter 6. The remaining two—Shell and BOC—plus the other 43 suppliers (who, together with the Calor companies, comprise the 47 suppliers identified as doing business in 1978 (see paragraph 5.1 and Table 5.1)) accounted in 1978 for about 27 per cent of the United Kingdom market in that year. We have no reason to suppose that the market as then so divided between Calor and the other suppliers has undergone any subsequent significant alteration—except that Calor is likely to have increased its market share by acquiring Glogas in October 1979 (see paragraph 6.9).

Patterns of business

7.3. Most of the suppliers dealt with in this chapter are principally engaged in supplying reference LPG to domestic users. And, in most cases, the business is a strictly local one involving the supply of gas to customers within a radius of perhaps 20–30 miles. In addition to supplying reference LPG, a number of the companies also supply LPG burning appliances.

7.4. There are, however, exceptions to the pattern as broadly outlined in the preceding paragraph. The more significant of those exceptions are indicated hereunder.

(i) *BOC.* This company (including its two subsidiaries) is predominantly a supplier of gases for industrial purposes. Out of a total of 23,708 tonnes of reference LPG supplied in 1978, only 1,209 tonnes were of butane. And whilst the company is a supplier throughout the United Kingdom, reference butane is supplied only in the Norfolk/Suffolk area by its subsidiary, Anglian Industrial Gases Limited. Sales of the company's products are, for the most part, made to contracted customers and not through distributors.

(ii) *Air Products Limited* (APL). This company supplies reference LPG in Great Britain only. In the year to 30 September 1978 its sales amounted to 5,905 tonnes which, except for an insignificant amount of gases supplied for research and laboratory applications, consisted entirely of propane and Apachi gas (see paragraph 2.3 and related footnote). APL supplies its products mainly to industrial users direct. In the 1978 trading year only 626 tonnes were supplied through distributors.

(iii) *Camping Gaz (GB) Limited* is a national supplier of reference LPG and LPG appliances. Its products are at present intended primarily for the leisure (including the Do-It-Yourself) market and gas is sold either in the form of disposable cartridges or in refillable containers of under about 3 kg capacity. The company markets its products through authorised dealers one of whom is Calor Gas Limited. Calor Gas Limited also refills containers on behalf of Camping Gaz (GB) Limited. Sales of reference LPG by this company in 1978 amounted to 2,849 tonnes (see also paragraph 5.12).

(iv) *Shell.* This company's reference LPG sales in 1978 amounted to 31,276 tonnes (of which 23,129 were propane). These were made in Great Britain only through a network of 12 main dealers. Shell is not a supplier of LPG appliances.

(v) *BP* supplies reference LPG in Northern Ireland only. The amount so supplied in 1978 was 2,744 tonnes of which 480 tonnes were propane. The company does not supply LPG appliances.

(vi) *The Supergas companies.* There are three related companies—viz Supergas Limited, Supergas (South) Limited and Supergas (North West) Limited. (They are referred to collectively herein as Supergas.) Supergas Limited has a 50 per cent shareholding in each of the other two companies. Supergas supplies both butane and propane. (Butane accounts for about two-thirds of total sales.) It also supplies LPG burning appliances and equipment. In the year 1978 the total amount of reference LPG supplied by the Supergas companies was 9,005 tonnes of which Supergas Limited accounted for 5,000 tonnes and Supergas (South) Limited for 3,040 tonnes.

(vii) *The British Gas Corporation (BGC).* BGC, in the year 1978, supplied reference LPG in three Regions in Great Britain—the South West, Wales and the North East. Total sales amounted to 6,538 tonnes in that year. Having disposed of its reference LPG activities in the South West Region (see paragraph 6.9) in 1979 it now supplies reference LPG in only two Regions (Wales and North East). These Regions accounted for total sales of 1,287 tonnes of reference products in 1978. (This total included 80 tonnes for use by the North East Region for its own internal purposes.) LPG burning appliances are now supplied by the Wales and North Eastern Regions. The South West Region had supplied such appliances until October 1979. All reference LPG now sold by BGC is supplied direct to consumers.

The relative importance of certain suppliers

7.5. It will be seen that total sales of the nine suppliers referred to in the preceding paragraph totalled 82,025 tonnes of reference products in 1978 (of which over 51,000 tonnes were propane). This represents about 21·4 per cent of the entire United Kingdom reference LPG market in that year, and, together with sales by the two Calor companies in the same year (see Table 5.2), amounted to 359,782 tonnes (94 per cent) out of a United Kingdom sales figure of 382,541 tonnes. Therefore the balance of 22,759 tonnes (6 per cent of the United Kingdom market) was supplied by 36 other companies of whom only three had sales exceeding 2,000 tonnes each in that year.

Distributorship agreements: restrictive provisions

7.6. It has been noted (paragraphs 5.12 and 6.24) that a number of suppliers of reference LPG require their distributors to undertake not to sell competitors' products. In addition to the two Calor companies (see paragraph 6.24) we identified 14 other suppliers who impose this requirement.

7.7. Whilst the terms in which the exclusivity provision in distributorship agreements is expressed may vary as between the several suppliers concerned, its common purpose and effect appear to be identical to those provided for in the Calor agreements (see Appendices 4 and 4(*a*)).

7.8. The 'other suppliers' (see paragraph 7.1) operating exclusive dealership provisions in 1978 are shown below together with the tonnages of reference LPG supplied by each of them in that year.

(i)	Shell UK Limited	31,276 tonnes
(ii)	BOC Limited*	23,708 ,,
(iii)	Air Products Limited†	5,905 ,,
(iv)	Supergas Limited‡	5,000 ,,
(v)	Supergas (South) Limited‡ ..	3,040 ,,
(vi)	British Petroleum Limited ..	2,744 ,,
(vii)	Go-Gas Limited (also trading as Compact Bottle Gas Limited) ..	1,748 ,,
(viii)	Portagas Limited..	1,500 ,,
(ix)	Ergas (NI) Limited	1,100 ,,
(x)	Supergas (North West) Limited‡	965 ,,
(xi)	Bell Gas Products Limited ..	250 ,,
(xii)	Hingley Gas	150 ,,
(xiii)	Flogas Limited	83 ,,
(xiv)	Abbey Gas Limited	40 ,,
		77,509 tonnes (being approximately 20·3 per cent of the total market in 1978).

*BOC said in September 1979 that only 5 per cent of its reference LPG sales were then made through distributors and that the company 'does not have a current policy of appointing distributors for LPG only'. The number of BOC's propane distributors was 5 at May 1980 (see also paragraph 7.4 (i)).
†See paragraph 7.4 (ii).
‡Associated companies (see paragraph 7.4 (vi)).

7.9. For the purpose of considering the possible implications of exclusive dealership arrangements in relation to a possible complex monopoly (see Chapter 8) we decided to take cognisance of only those suppliers whose sales of reference LPG through distributors in 1978 exceeded 1,000 tonnes. These suppliers, in addition to the two Calor companies, are Shell, Supergas, BP, Go-Gas, Portagas and Ergas.

'Binding out' provisions

7.10. In addition to the exclusivity provisions in its agreements BP requires its main dealers to restrict their activities in certain respects after termination of those agreements. (Each of those agreements provides for six months notice of proposed termination save in the event of the issue of a winding-up order, etc.)

Exclusive agreements regarding valves, regulators and appliances

7.11. Whilst a number of the 'other suppliers' of reference LPG market appliances for use with that product, only Supergas Limited is known to be party to currently operative exclusive agreements with appliance suppliers. The nature and extent of those agreements is shown below.

(*a*) Supergas Limited uses on its butane cylinders (and those of its associated companies—see paragraph 7.4(vi)) a 20 mm valve and regulator of unique design. Supplies of these products are obtained from Gimeg Controls and Appliances Limited (Gimeg) by whom they are manufactured under an arrangement with an Italian company (Sierra) which holds the patent for the design. A verbal agreement between Supergas and Gimeg is said to provide that regulators of this patent, marked 'Supergas', shall be supplied in the United Kingdom to Supergas only. Gimeg, in explaining these arrangements, said

> 'We would and could produce, either through Sierra or direct a 20 mm clip-on regulator to fit our valves as now used by Supergas . . .
>
> We could then not label the regulator with "Supergas", but would have to use a different trade-mark and an appropriate identification . . .'

(*b*) Supergas Limited requires certain of its suppliers of appliances to enter into an agreement which, *inter alia,* provides that those suppliers 'shall not sell goods fitted with the company's [Supergas] regulators or carrying its trade marks designs emblems insignia instructions and notices to persons firms or corporations not selected authorised dealers of the company'.

Safety of appliances

7.12. It is the practice for those suppliers dealt with in this chapter who market LPG burning appliances (eg Supergas and BGC) to obtain their supplies from appliance manufacturers whose products are of types which have been tested by Calor and have met the appropriate British Standard or Calor's own approval criteria. Although Shell does not itself market LPG appliances it has informed us that its main dealers (see paragraph 7.4(iv)) trade only in appliances which conform to recognised safety standards (ie either BS or Calor criteria where no BS exists). Camping Gaz (GB) Limited told us that its LPG burning appliances are made to meet, in general, the highest safety standards of the countries in which they are sold but, should any country require any additional refinement on a particular appliance, then that refinement is incorporated in appliances sold in that market. The company's representatives told us that Camping Gaz products are not submitted for 'Calor Approval' and that Calor, being aware of the high standards to which Camping Gaz appliances are manufactured, accepts them for sale through its distribution network without such approval.

Cylinder hire charges and other arrangements

7.13. In most cases the suppliers referred to in this chapter adopt the system described in paragraph 5.14 of charging for the first cylinder in which LPG is supplied to a domestic customer and refunding part of it when the cylinder is finally returned to them. Some suppliers, however, adopt a different system.

Shell, for example, requires a deposit and a non-refundable hire charge for each cylinder supplied to non-contracted users through its main dealers. In May 1980 the deposit was raised to £16 (from £8) and the non-refundable hire charge to £8 (from £5). If a cylinder is returned damaged beyond repair the deposit is not refunded but if the damaged cylinder can be repaired a charge of £8 is made. As from May 1980 contracted customers pay a refundable deposit of £16 for each cylinder. And instead of a hire charge they also pay a surcharge or are allowed a rebate on gas supplied. The amount of the surcharge or rebate varies and reflects the rate at which cylinders are returned by the customer for refilling ('the cylinder turnround factor'—CTF). BP makes a distinction between domestic and industrial customers. As regards the former this company's practice is similar to that adopted by Calor and most other suppliers (ie a deposit is required part of which being refundable if the cylinder is finally returned in good condition after a stated period). Industrial users are supplied with cylinders free on loan but (as is Shell's practice also) the price of gas supplied is adjusted by application of a CTF.

7.14. As has been noted in paragraph 5.29, there are a few instances where an LPG user, on first purchasing that product, also acquires ownership of the refillable container in which it is contained. Camping Gaz (GB) Limited is such a supplier. The cylinder concerned is of 2·72 kg (6½ lb) capacity and when empty may be returned in exchange for a full one on payment of the refill price. There is no provision in this arrangement for refund to the owner of any part of the cost of the cylinder should it be returned to the company by an owner not requiring a refill. Another such supplier is Travel Gas (Midlands) Limited which in 1978 had sales of reference LPG amounting to 1,650 tonnes. This company refunds to its customers the full price paid for cylinders which are finally returned to the company. The North Eastern Region of BGC refunds to its customers the major part of the deposit irrespective of the period during which the user may have held the cylinder. (In early 1980 the practice was to refund £9 out of the initial £11 deposit.)

Metered LPG

7.15. The Wales Region of BGC supplies LPG to domestic consumers in 46 kg cylinders which are inter-connected in 'banks' of 6–8 units. No separate charge is made for cylinders so supplied and used. The LPG is discharged via a conventional meter which is read by the Region's staff quarterly and charges are raised against the customer on that basis. (At November 1979 the charge was £10·04 per thousand cubic feet.) This arrangement appears to be unique and the reasons for it are said to be 'historical'.

CHAPTER 8

Exclusive dealing

8.1. As already noted (see paragraph 1.7) the Commission, having regard to the provisions for exclusive dealing as set out in agreements between certain suppliers of reference LPG and their distributors, provisionally concluded that this circumstance appeared to constitute grounds for a complex monopoly finding in the terms of sections 6(1)(*c*) and (2) of the Fair Trading Act 1973. Steps were taken to inform The Calor Group Limited and each of six other suppliers (as identified in paragraph 7.9) accordingly. In inviting the suppliers' comments the Commission intimated that, should no comments be offered in any instance, they would proceed to make their own determination in the matter.

8.2. Replies were received from The Calor Group Limited, BP Oil Limited, Shell UK Oil Limited, Portagas Limited and Ergas (NI) Limited. No reply to our invitation was received from either Supergas Limited or Go-Gas Limited but the former had already provided some oral evidence in this connection (see paragraph 8.15).

8.3. In their replies each of the five suppliers who responded to the Commission's letter held that exclusive dealing does not prevent, restrict or distort competition in the supply of reference LPG in the United Kingdom. The arguments deployed by them are briefly summarised in the following paragraphs.

8.4. *Calor* emphasised that it was open to any competitor to establish a distribution network for its products as there are obviously a great number of outlets nationally available where Health and Safety Executive requirements could readily be satisfied. This was particularly so in respect of its greatest potential competitors—the oil companies. There had been no shortage of other suppliers intent on capturing consumer demand and apparently no shortage of outlets able and willing to participate in distribution of competitive LPG.

8.5. The object of retaining exclusivity is based, Calor said, on the following principal considerations.

(*a*) *Safety*. The arrangement enables the company to retain control over its cylinders and can ensure that they are filled, tested and distributed in a safe manner. It would be folly, it said, to permit access to its distribution system to the products of other suppliers if there were even a possibility that the risk to the consumer would thereby be increased.

(*b*) *Calor's reputation*. Such is Calor's position in the market that its name has become a synonym for LPG. Any accident involving LPG is likely to be associated with the company even though its product may not have been involved.

(*c*) *Storage at distributors' premises.* HSE requirements for dealers' and stockists' storage points have become increasingly rigorous. There is generally a limited amount of space for cylinder LPG storage there. If the Calor distribution network were opened to competitors there would be difficulty in allocating that space to the products of different suppliers and in the distributors holding adequate stocks of the range of capacities necessary to meet demand. And there would be a tendency for at least part of the available storage space to be utilised by products for which demand would be low.

(*d*) *Unfair.* Calor, having largely created the market for LPG and having invested heavily in doing so, said that 'it is positively against the public interest that when the market is [now] more mature, those who have neglected their opportunities should have immediate access to the distribution system built by the market leader and the main dealers'. Calor has expended much effort, it said, in training and supervising its distributors and considers it not unreasonable that those who wish to compete should make similar efforts.

(*e*) *Economies of distribution.* Calor undertakes the responsibility of direct delivery to its main dealers and dealers and exclusivity results in economies of distribution. Without exclusivity, distribution costs would be increased because, for example, there would be less scope for deliveries to consist of full trailer loads. There would also probably be increases in the number of direct accounts and in marketing costs as well as a reduction in service to the consumer.

8.6. Calor concluded that 'the present system of distribution has undeniably contributed to the safe and efficient supply of LPG by Calor to the consumer. Exclusivity of supply of LPG, and Calor's policy of selective distribution, are indispensable to the maintenance of an efficient distribution network'. In Calor's opinion there are no material restrictions of competition which outweigh the benefits which the consumer derives from the present system. The company added that it has had 'plenty of experience where in fact dual dealerships have almost packed up of themselves because they have been so ineffective'.

8.7. Among the arguments used by BP in defence of exclusive dealing were that as LPG is a homogeneous commodity, the marketing of it requires the establishing and maintenance of a strong brand image. This, in turn, requires that—as at petrol stations—the retailers' premises must be clearly signalled and not be cluttered with advertisements for the products of competitors. Furthermore, as the name 'Calor' in Great Britain and 'Kosangas' in Northern Ireland are generic terms for LPG, the company says that this circumstance makes it all the more important, if it is to compete successfully, to distinguish between BP's brand of reference LPG and other suppliers' brands of that product.

8.8. Nor, in BP's view, would the banning of exclusive dealing result in improved competition. For, if a distributor stocked a number of competing brands (of essentially an identical product) he would have no incentive to promote sales of any one brand unless to do so were more remunerative to him.

And, if he did so, this would, in effect, destroy competition and be likely to lead to *de facto* exclusive distribution 'which is a feature of the market as it is, but without the opportunities for competitive activity which presently exist'.

8.9. *Shell* advanced arguments in support of exclusivity by asserting that, if its main dealers and dealers also stocked competitors' brands of LPG, they would have a conflict of interest which would disable them from, as at present, using all reasonable endeavours and all due diligence to sell and foster the sale of Shell's brand of product. There would, too, be difficulties arising from sharing limited approved storage space with competitors' products (see also paragraph 8.5(*c*)) and economies of distribution would be adversely affected (see also paragraph 8.5(*e*)).

8.10. Abandonment of exclusive dealing might require Shell seriously to consider the practicality of the only alternative which, it said, would be to undertake for itself the distribution of reference LPG, and that this would be expensive.

8.11. Shell also expressed the view that, as Calor has a much larger share of the reference LPG market than does Shell, it would be significantly easier for Calor to induce what are now Shell dealers to stock Calor LPG as well, than for Shell to induce Calor dealers to stock Shell LPG. There is, too, the fact, the company said, that, as Calor's name is so closely identified in the public's mind with all LPG, customers often ask merely for 'Calor gas' and this would be disadvantageous to other suppliers if their products were sold in outlets where the Calor brand of product was also available.

8.12. *Portagas* defended exclusive dealing on safety grounds. It is essential, the company said, that suppliers keep control of their own cylinders at all times (filling, storage and distribution) and, as different suppliers set different safety standards, danger and added risks would be created if stocks of cylinders supplied by a number of companies were to be stocked together.

8.13. *Ergas* in supporting existing practice, referred to the importance it attaches to the training of distributors in all safety aspects of reference LPG supply and to the capital which the company has expended in equipping its distributors to enable them to market its product. It would, the company said, be 'unrealistic to suppose that we could allow our capital investment and contribution to expertise to be used in the advancement of a competitor's business'.

8.14. Ergas also referred to the fact that it uses a valve and regulator system which is different from those of other LPG suppliers in Northern Ireland. It feared that, if competing brands of product were sold from the same premises as those where Ergas is sold, hazard would be created in that errors might well arise from mismatching different systems.

8.15. Although *Supergas* did not reply to our written invitation to comment specifically on exclusive dealing, representatives of that company, in giving oral evidence to us at an earlier date, said that, having chosen its dealers, it had a 'vested interest' in them and afforded them assistance in advertising and in providing them free on loan with an initial stock of cylinders. The company added that in practice it 'quite often' relaxes the exclusivity provision. It regarded the exclusivity arrangement as being justified on commercial grounds.

CHAPTER 9

Complaints and criticisms

General

9.1. During our investigation we received a number of written complaints concerning a variety of aspects of the reference LPG market. (In addition we received several complaints which, concerning the supply of LPG in bulk, were not within our terms of reference. We passed these to the Office of Fair Trading for attention.) For the most part complaints relevant to our investigation were sent to us direct by members of the public but a number also reached us via the Department of Trade, the Office of Fair Trading and Members of Parliament. Many complaints which we received from consumers were obviously made in response to the press advertisements concerning our investigation (see paragraph 1.3).

9.2. It is understood that the National Gas Consumers' Council, being concerned with matters relating to piped gas, have no *locus standi* in matters concerning the supply of reference LPG. (There is no organisation which has functions comparable to that Council in relation to the latter.)

9.3. We also received three letters from Calor distributors commenting favourably on the standard of service provided by the company.

The complainants

9.4. Whilst most complaints were made by individuals on their own behalf, some were made by individuals on behalf of a number of complainants. (One letter was written on behalf of 230 mobile home residents.)

9.5. A number of representative bodies also submitted comments on those particular aspects of the reference LPG market which affect their members. In some, but not all, cases their views were of a critical character.

9.6. Representative bodies which submitted comments were:

The National Housewives Association Limited;

The Federation of Women's Institutes of Northern Ireland;

The British Hardware Federation;

The National Association of Plumbing, Heating and Mechanical Services Contractors;

The Association of Pleasure Craft Operators;

The Camping Club of Great Britain and Ireland Limited;

The Association of Trailer Manufacturers.

9.7. Neither the Confederation of British Industry nor the Trades Union Congress—whose views we sought—submitted comments on any aspect of the investigation.

The complaints

9.8. We received 130 written complaints. In addition we received a number of telephone calls from parties who, whilst prepared to complain verbally, were not prepared to do so in writing. Some of these callers identified themselves as being Calor distributors who said they feared the consequences for their businesses if their identity became known to Calor. We informed all such complainants that it is the Commission's practice to take cognisance of written complaints only. We record these facts only to observe that the 130 written complaints which we did receive should perhaps be regarded as not representing the full extent of the dissatisfaction which probably exists.

9.9. Analysis of the written complaints shows that 102 of them specifically mentioned Calor alone whilst the remainder were of a more general character (though in most cases they also concerned Calor).

9.10 Examples of complaints of a general character related to such matters as the price charged for reference LPG which the complainants usually described as being a waste product which is otherwise flared off as being worthless, and the price differential for reference LPG when supplied in small and large containers.

9.11. Some of the complaints concerned the practice of exclusive dealing and appeared generally to have been made by distributors in the context of the non-availability of reference LPG from a particular supplier at periods of peak demand. In so far as they concerned the competition aspects of exclusive dealing, they may be regarded as having been dealt with in the suppliers' arguments as set out in Chapter 8.

9.12. Apart from exclusive dealing the complaints have been broadly classified as concerning the aspects of Calor's operations shown hereunder.

(i) Failure to provide a satisfactory service in the supply of reference LPG especially (but not wholly) during periods of adverse weather, industrial disruption, cylinder shortage and shortage of gas.

(ii) The non-interchangeability of Calor cylinders with those of certain other suppliers of reference LPG and the resultant difficulties and costs to consumers on account, for example, of the purchase of regulators and adaptors.

(iii) Arrangements governing the use of cylinders and the cost to domestic consumers of switching to another supplier of LPG.

(iv) Allegedly excessive prices charged for LPG appliances and for reference LPG and unjustified differentials in the price of refills for small, as compared to large, cylinders.

(v) The extension of Calor's monopoly position in the reference LPG market by the acquisition in 1979 of the British Gas Corporation's 'Glogas' business in South-West England.

(vi) The claim by Calor that certain appliances 'are suitable for use with Calor Gas only'.

(vii) Calor's listing as a Test House of Assessed Capability by the British Standards Institution and allegations of discrimination in dealing with applications for tests.

(viii) The use of the 'Calor Approved' arrangements for LPG appliances.

(ix) Calor's high-handed and autocratic manner in dealing with complaints from users and stockists of its products.

9.13. In addition to the matters referred to at paragraph 9.12(i) to (ix), a number of complaints alleged Calor's refusal to appoint distributors and unreasonable termination of certain distributorships. As such complaints necessarily concerned the particular circumstances of individual complainants, including the standard of safety of their storage arrangements, the Commission did not pursue them individually. The fact that complaints of this character had been received was brought to Calor's attention.

Calor's comments on complaints

9.14. We put the burden of the complaints as listed in paragraph 9.12 to Calor and summarise hereunder the company's comments on each of those items.

(i) Calor accepts that it requires bulk butane storage. An attempt to secure such a facility at Bedworth has so far been unsuccessful. Other sites are being considered. Meanwhile the company hopes that by the provision of more cylinders, by increasing the supply of filled cylinders at filling plants and in the hands of distributors and by encouraging users to acquire a second cylinder, the future position should show improvement. The company's aim is to hold 2½ weeks' storage at times of peak demand and last winter succeeded in achieving 2 weeks' supply. To some extent past difficulties have been due to overtrading by particular stockists but this is said to be now under control.

(ii) Calor regards it as desirable in the interest of safety that each supplier of reference LPG should retain full control over his own cylinders. It does not accept that it is its fault that all valve and regulator systems on butane cylinders are not of the same type and dimensions.

(iii) Calor's arrangements regarding the use of cylinders provide for a Refill Authority Charge and, in certain circumstances, for a refund of some part of that charge. Having regard to the cost of cylinders, their periodical inspection and servicing, Calor regards the arrangement as being a fair and reasonable one. Calor is a national supplier and is increasing its distribution network.

(iv) The requirement that its distributors should buy appliances only from the company has been abandoned. And although maximum resale prices for appliances are recommended by the company, it has no reason to believe that they are regarded as standard prices. On the contrary its distributive network, including Calor Centres, now price by reference to the competition of other retail outlets. Calor claims that its prices for reference LPG are reasonable and that, as an efficient supplier, it makes profits which are not excessive (see paragraph 6.81 and Table 6.5).

It points to the fact that, as a source of energy, its product is cheaper than electricity supplied at the standard rate and that the company faces competition from other suppliers including major oil companies. It remarks that its products are priced on a national basis and observes that its competitors refrain from operating in remote and sparsely populated areas. The cost of the product, it is pointed out, is only one element in a composite whole which also includes the provision of cylinders, their inspection, testing and repair; the provision of filling plants, transport and a distribution network; staffing, staff training and supervision etc. Furthermore, the business is largely seasonal in character. (The cost of maintaining supplies in periods of low demand has been emphasised by Camping Gaz (GB) Limited also.) As regards differentials in the prices of LPG when supplied in large and small cylinders, Calor says that they are justified in view of the substantially higher costs per tonne associated with supplying reference LPG in small cylinders—see Table 6.3 (paragraph 6.80). (Camping Gaz (GB) Limited gave us a cost profile for its 2·72 kg (6 lb) cylinder refill. Although some of the items in the profile are necessarily approximations only, the profits earned by the company and its distributors do not appear to be excessive. At the time the profile was constructed (March 1980) the refill price for the cylinder in question was £3·43 and the price of a 5·5 kg (10 lb) refill of Calor brand butane was £3·25.)

(v) The acquisition was consented to by Government.

(vi) This claim is made on literature relating to one type of cooker only. The literature was prepared by the manufacturer (Flavel). Calor has now arranged that this terminology (which it regards as not misleading) will be discontinued.

(vii) The steps taken by BSI to ensure the independence of listed Test Houses from commercial/marketing influences are referred to in paragraph 6.30. A statement of the instances in which priority was accorded by Calor Laboratories to the testing of particular appliances during the period April 1977 to June 1980 is at Appendix 7. This is referred to in paragraph 6.31 and in Chapter 10.

(viii) 'Calor Approval' is accorded to appliances which meet British Standards for safety and performance. Where such Standards do not exist draft British Standards are used and, where these are not available, standards formulated by Calor are used. Although at present the specifications for Calor standards are not published they are made available to applicants for tests and would be made available to anyone requesting details of them.

(ix) This is a difficult matter to control. The company said that it is 'aware that there is a small body of complaint and we will take steps to sort it out'.

9.15. We received complaints (from more than one source) concerning the principle of appointing, as a BSI listed Test House, an organisation which is itself engaged in marketing products of the types tested there. The complainants generally sought assurances that their identities should not be disclosed and for this reason we were unable to test their allegations. They appeared to regard

Calor Gas Limited, not Calor Central Laboratories, as the body so listed and felt that the latter is not independent of the former. One complainant said that whilst he would find difficulty in proving that discrimination is practised by Calor Laboratories at the behest of Calor's commercial interests, he believed that to be the case and said that, without explicitly according priority, by raising a succession of queries concerning minor points, the testing of a particular appliance could be prolonged with the result that other appliances would acquire *de facto* priority over it. He (and other complainants) felt that the testing of LPG appliances should be conducted by a body whose interests do not involve the marketing of such products. On the other hand we received no such complaint or suggestion from any trade organisation representing LPG appliance manufacturers or importers.

CHAPTER 10

Conclusions

10.1. Under section 6(1)(*b*) of the Fair Trading Act 1973 a monopoly situation exists if at least one-quarter of all the goods in question which are supplied in the United Kingdom are supplied by members of one and the same group of inter-connected bodies corporate. As we have shown in paragraph 5.7, in 1978 Calor Gas Limited supplied 65·3 per cent of the reference LPG supplied in the United Kingdom and Calor Kosangas Northern Ireland Limited supplied 7·3 per cent. Calor Gas Limited supplied reference LPG wholly in Great Britain and Calor Kosangas Northern Ireland Limited supplied reference LPG wholly in Northern Ireland; but together these two companies, which are both wholly-owned subsidiaries of The Calor Group Limited and are therefore inter-connected bodies corporate, supplied over 70 per cent of the reference LPG supplied in the United Kingdom.

10.2. We conclude therefore that a monopoly situation under section 6 (1) (*b*) of the Act exists in favour of The Calor Group Limited and its subsidiaries Calor Gas Limited and Calor Kosangas Northern Ireland Limited.

10.3. No other company or group of companies has a market share of as much as one-quarter; indeed the largest share held by any supplier other than Calor is about 8 per cent.

10.4. Calor's dominance in the reference LPG market dates back to the early history of the company in the mid-1930s. Calor appears to have recognised the potential market for butane in rural homes which did not then have access to electricity or to mains gas, and to have decided at that early stage to aim at distribution of butane in cylinders on a national scale. Calor also recognised at this stage that it was essential for it to market the appliances which could be used with butane and to this end it set out to encourage the supply and development of appliances and to provide manufacturers with technical and advisory services.

10.5. The decisions to aim at national distribution and to involve itself with the supply of appliances appear to have resulted in rapid expansion of the business from that time, when there were no substantial competitors marketing butane. In these circumstances Calor inevitably became the dominant supplier of cylinder butane, and when, in 1970, an increased demand for it was being created by the introduction of mobile cabinet heaters Calor was able to retain a substantial share of the sharply expanding market. Calor's involvement with appliances did much both to create the original market for cylinder butane and also, Calor being the first to market cabinet heaters in the United Kingdom, to create the increased demand for it after 1970.

10.6. Calor's entry into the propane market was somewhat different. When the company began to supply propane in 1955 there were substantial companies already supplying propane, but it appears that Calor's experience in the marketing of cylinder butane enabled it to obtain a significant share of the cylinder propane market by developing and promoting new applications for it. Calor's share of the cylinder propane market, though at present increasing, has never been as great as its share of the cylinder butane market, and the company's major market share of the supply of reference LPG as a whole has always been mainly attributable to its butane share.

10.7. Calor's dominant position in the reference LPG market as a whole has its origin, therefore, in its being first in the field in the butane market, which the company itself did much to create and subsequently to expand; and, although it has made some acquisitions, there is no evidence of the company having sought to build up or maintain a monopoly position by, for example, acquiring competitors or by systematic predatory trading practices aimed at the prevention or removal of competition.

10.8. Calor has in fact an increasing number of competitors in the supply of reference LPG, but most of the other suppliers are small companies supplying only very limited geographical areas and none has a national distribution network comparable to Calor's. There appears to be no particular barrier to entering local markets but, because of the very substantial capital investment required, particularly in cylinders if Calor's position is to be matched, there is much greater difficulty in achieving national distribution. However, a potential threat to Calor's position in the LPG market generally (though not necessarily in reference LPG) is represented by the major oil companies, which are at present the main source of supply of LPG and have the financial and other resources to market and distribute it on a large scale if at any time in the future circumstances favour their doing so.

10.9. Although, as we have indicated, Calor is not open to criticism for the way in which it achieved and has preserved its dominant position in the reference LPG market its position is a strong one which does not appear likely to be seriously eroded in the foreseeable future. In these circumstances we need to consider the ways in which Calor, as the major supplier in the industry, operates, and to assess the effects of some of its trading practices. We do so under a number of heads, some of which were the subject of complaints made to us in the course of our inquiry.

Alleged inability to meet demand

10.10. We received a substantial number of complaints from users of butane for domestic appliances that, particularly during the winter of 1978–79, they were at times unable to obtain supplies from Calor distributors.

10.11. There undoubtedly were cases during that winter of inability to obtain supplies, and Calor conceded that this was so. We regard this as a serious criticism of a monopolist, particularly in this case since Calor has a responsibility to ensure continuity of supply not only because of its dominant position

and the difficulty and cost for a user in obtaining LPG from an alternative supplier (see paragraph 5.22) but also because Calor has actively encouraged the increased demand for butane particularly by promoting the sale of cabinet heaters. However, the matter needs to be looked at in proper perspective. The industrial troubles of what has since come to be called 'the winter of discontent' (1978–79) led to a widespread fear of severe interruption in the supply of other fuels and to a consequent increase in the demand for cabinet heaters and the cylinders used with them. This and the fact that there was a particularly cold spell in the early part of 1979 caused an unexpected and very sharp peak of demand in a market which has in any case been expanding rapidly. Moreover, there is evidence that some users who found themselves without supplies had adopted the economical but imprudent course of having only one cylinder and no reserve.

10.12. Calor's stocks were reduced to an exceptionally low level and there were in addition some purely local and temporary distributional difficulties. However, Calor has assured us that it recognises the need to ensure that supplies are available to meet demand. The company has been taking steps to acquire storage facilities for bulk butane, to increase the stocks of butane it holds in cylinders and to increase the distribution network where local shortages occurred; in addition it has been encouraging users themselves to have a spare cylinder. While the responsibility for supply difficulties must ultimately rest with Calor, we recognise that the situation in early 1979 was unusual and that the company has since taken a number of steps to enable it to cope more effectively with similar conditions. There is no evidence that supply shortages have been either numerous or frequent, and we do not think that Calor can be criticised on the ground of having encouraged the increasing use of domestic appliances without regard to the availability of butane to fuel them.

Prices and profits

10.13. Certain aspects of Calor's pricing for reference LPG appeared to us to be potentially open to criticism, and some were the subject of complaint. We received a number of complaints alleging that the price of LPG in small cylinders is disproportionately high in relation to larger cylinders. We also had complaints that Calor's prices are excessive generally. All these complaints were from, or on behalf of, private users and related to butane for domestic or leisure use. No such complaints were received from industrial users or related to propane.

10.14. We considered in some detail the allegation that the price of LPG in small cylinders was disproportionately high. As is shown in Table 6.3 (paragraph 6.80) the cost structures for gas in small and large cylinders are substantially different, the cost per tonne of production, distribution and cylinder depreciation representing together a much higher proportion of total costs per tonne in the case of smaller cylinders. Although the gross margin per tonne is greater in respect of smaller cylinders, there is an even greater disparity in the fixed assets employed per tonne (mainly cylinders), and in consequence the rate of return per tonne on fixed assets employed is about the same for small and large cylinders.

10.15. Although it is undoubtedly true that the retail price to the user per kilogram of, for example, butane in a 4·5 kg cylinder is some 70 per cent higher than that of butane in a 15 kg cylinder, we consider that the differentials are justified, bearing in mind the differentials in costs and fixed assets employed in each case. A smaller differential would involve the user of a 4·5 kg cylinder making a smaller contribution than that made by the user of a 15 kg cylinder to overhead and distribution costs.

10.16. Another feature of Calor's pricing policy which appeared to us to be potentially open to criticism was the fact that its Refill Authority Charge (that is the initial charge to a user to enable him to obtain a cylinder) is the same for all cylinders of 3·9 kg and above irrespective of the size, and therefore the cost, of the cylinder (see paragraph 6.72). It appeared to us, however, that the differential cost of cylinders is already taken into account in determining the price to be paid for a refill of gas and that there may therefore be no case for any further differentiation in the Refill Authority Charge. In any case a uniform charge makes for administrative simplicity, enables the user to change more easily from one size to another and is the practice adopted by the industry generally.

10.17. The Refill Authority Charge appears to be fairly commonly regarded by the public as a deposit to ensure return of a cylinder, and it is therefore expected (wrongly) that the amount will be refunded when a user ceases using Calor gas. In fact, at most only a percentage is refundable (see paragraph 6.72 and Appendix 3), and there is some evidence of users who intend to switch from Calor to another supplier being deterred from doing so by the fact that the cost of obtaining a cylinder from the new supplier (and perhaps of obtaining a new regulator compatible with it) will be offset by a refund of only a part of the cylinder charge already paid to Calor. Thus the system of refunding a reducing part of the Refill Authority Charge tends to tie users to Calor to the disadvantage of other suppliers.

10.18. It would of course be possible to eliminate the Refill Authority Charge altogether and to make a corresponding increase in the price of the gas. However, this would be inequitable since the heaviest users would pay a disproportionately high contribution to the capital and distribution costs of operating the system. We accept the principle of making some form of separate charge. The Refill Authority Charge is not a deposit; it is more in the nature of a hire charge. However, a user does not hire any particular cylinder, and the system is operated on the basis of cylinders being continually exchanged, with Calor holding a substantial reserve of cylinders so that the user can obtain an immediate replacement; Calor therefore regards the Refill Authority Charge as being payment for access to its cylinder exchange system over a number of years. The fact that the proportion refundable reduces from year to year simply means that the longer the user has access to the system the more, in total, he pays for it. Looked at in this way, we do not think that the system or the rate at which the refund reduces to nil (over a period of 12 years) are unreasonable. We suggest, however, that since users may well overlook or forget the conditions

as to refunds (which are set out in fairly small print on the back of the Refill Authority Agreement) Calor should set them out somewhat more prominently, as indeed should other suppliers whose conditions are similar.

10.19. Calor's system of charging for the use of cylinders appears to us to be generally equitable, and we are satisfied that Calor does not make a disproportionate profit on its cylinders compared with its reference LPG business as a whole.

10.20. With regard to the general level of Calor's prices for reference LPG, it is understandable that this has been the subject of complaint, particularly in view of the frequency with which its prices have been increased. Since 1974 there have been price increases in Great Britain at least once in each year and in 1974 and 1975 prices were increased twice, in 1976 three times, and in 1979 four times. However, it has to be remembered that Calor is essentially a wholesale distributor of LPG, and is not a producer. Its prices therefore have to be considered in the light of the prices Calor itself has to pay.

10.21. As we have shown in paragraph 6.76, the average cost of bulk butane purchased by Calor increased by 209 per cent between 1 April 1974 and 31 January 1980; the average cost of propane increased by 184 per cent in the same period. The cost of gas represents around 40 per cent of Calor's total costs in supplying cylinder LPG, and must therefore be a major determinant of its prices. However, Calor's prices in both Great Britain and Northern Ireland for both butane and propane in cylinders of various sizes increased over the period substantially less than the cost of gas. For example, in Great Britain the price of butane in a 15 kg cylinder (by far the most widely used size) increased by only 164 per cent.

10.22. In our view Calor's price increases in recent years, though substantial, cannot be regarded as unreasonable or excessive. They have in fact been not far out of line with the General Index of Retail Prices, even though the cost of gas to Calor has risen far more than the index.

10.23. Calor is, we consider, an efficient and cost-conscious company. Although it enjoys a dominant position in the market for reference LPG, it has not set its prices at a level which has enabled it to achieve unduly high profits. Some details of its profits are set out in paragraph 6.81 and Appendices 5 and 6.

10.24. The profitability of Calor's reference business as measured by its return on capital employed on both historic cost and CCA bases for the years 1975 to 1979 was as follows:

	Historic %	*CCA* %
1975	15	N/A
1976	25	N/A
1977	22	9
1978	15	6
1979	16	9

We recognise that these figures relate to only part of a business which Calor regards as indivisible and that the allocations used in making the calculations involve an element of judgement. However, the rates of return are not markedly different from those for the business as a whole. The figures include the sale of appliances for use with cylinder LPG; in this activity Calor is in competition with other suppliers, and in any case its exclusion from the figures would make only a marginal difference to them. The above rates of return, which average 19 per cent on a historic cost basis over the five years and 8 per cent on a CCA basis for the three years for which figures on that basis are available, cannot be regarded as excessive or as reflecting pricing policies which exploit a monopoly position.

10.25. However, the principal constraint on Calor's LPG prices is not, and we think is not likely to be, competition from other suppliers of LPG; it is the price level of alternative fuels, of which the most important is electricity. The future profitability of Calor's reference LPG business appears to be uncertain. A relevant factor will be the cost to Calor of obtaining bulk LPG (which we are not in a position to predict); but if there are substantial rises in gas and electricity prices to meet target rates of return set by the Government for the two nationalised industries, this could enable Calor to increase its profitability significantly. It might also affect the extent to which oil companies participate in the LPG industry.

Calor's concern for safety

10.26. During the course of our inquiry Calor was at pains to impress on us that it regarded safety in the use of LPG in cylinders as a factor of paramount importance. LPG is a potentially dangerous material and it is, of course, very much in the public interest, as well as in the long-term commercial interest of Calor, that the handling and use of LPG in cylinders should be made as safe as possible. We accept that Calor has adopted and maintains a highly responsible attitude towards safety. This is reflected in the attention which the company pays both to the quality, testing and filling of its cylinders and to the quality and testing of the LPG appliances which it sells through its network of distributors. In addition the group concerns itself with the selection and training of its distributors and with safety in the storage of cylinders at their premises. In all these matters we think that Calor's standards are high, and that it has accepted the responsibility for safety which falls upon it as market leader. Moreover, we think that Calor's attitude towards safety has to some extent influenced other suppliers in the industry.

10.27 In practical terms Calor's concern for safety involves the activities of its laboratories at Addlestone and also implies a degree of control over the activities of its distributors such as a wholesale supplier would not normally need to exercise. Both of these give rise to certain practices which we need to consider.

Calor Gas Laboratories

10.28. The functions and status of the Calor Gas Laboratories at Addlestone have been described in paragraphs 4.11 and 6.30. The laboratories provide *inter alia* a useful service both in the testing of LPG appliances on behalf of the

British Standards Institution and also in the testing on behalf of manufacturers of appliances for which no British Standard may exist, and which may be marketed either through Calor's distribution network or through other distributors.

10.29. Given that the British Standards Institution works through independent laboratories and that Calor, with its dominant position in the LPG market, has the only laboratories in the country with appropriate facilities for testing LPG appliances (both for BSI and for manufacturers), we consider it essential that for testing work the laboratories should be independent of Calor's commercial activities, and that they should be clearly recognised as being so. We accept that in the actual testing of appliances the laboratories are fully independent and that there is no discrimination against, or in favour of, the appliances of any particular manufacturers. Appliances are tested objectively against the same criteria whether or not they are appliances in which the group has, or is likely to have, a commercial interest. However, we received complaints that there is sometimes undue delay in testing appliances in which the group has no commercial interest. We were not given sufficient information on which to base detailed examination of any individual alleged cases of this kind, but Calor told us that the laboratories give a general priority to BSI 'Safety Mark' submissions and that in addition priority is given on the decision of the Managing Director of Calor Gas Ltd in particular cases on commercial grounds 'when the Calor Commercial/Marketing Department form the opinion that to meet market needs and a particular marketing opportunity (eg the Calor Show 80) it is essential that the testing of an appliance or of appliances of a particular type should be completed by a certain date'.

10.30 We were assured by Calor that there had been no cases of individual applications for tests being delayed and therefore no discrimination *against* particular appliances or manufacturers, and that the occasions on which there was discrimination *in favour of* particular applications (by giving them priority) were 'rare'. The Company's analysis showed that there were 31 such cases between March 1977 and May 1980 out of the total of 1,719 test assignments carried out in the period.

10.31. The Calor Laboratories are the only such testing establishment in the country and, as we have said, they should be wholly independent. Indeed, as we have pointed out in paragraph 6.30, BSI seeks to ensure that a Test House of Assessed Capability shall operate independently of the wider commercial interests of the organisation of which it forms part. However, the fact that the laboratories give priority to applications on the instructions of the Managing Director of Calor Gas Ltd following recommendations from the 'Calor Commercial/Marketing Department' undermines the claim that the Laboratories are wholly independent and, in spite of the BSI's intentions, establishes that they are not so. It may be that on occasions there is in the public interest a real need for some particular test to be given priority, but the number of cases in which priority has in fact been given seems greater than would be warranted on such grounds and the categories of considerations taken into account by Calor when giving priority (see Appendix 7) suggest that commercial advantage has been an important factor, though the advantage may not necessarily have

accrued only to Calor. We think that it is far from satisfactory that priority decisions should be made, as at present, by the Managing Director of Calor Gas Ltd or, indeed, by anybody concerned with the commercial affairs of Calor. If there are to be any priorities it would be better if they were determined by some independent person or body.

Calor Approval

10.32. Testing of appliances by the laboratories for the purpose of 'Calor Approval' (see paragraph 4.12) is to the safety criteria contained in relevant British Standards or draft British Standards where these exist and to additional criteria, concerned with quality and reliability, set by Calor itself. There is no objection to Calor establishing its own criteria; but, whereas the British Standards criteria are those of an independent body and are publicly ascertainable, those of Calor are not. The potential purchaser of an LPG appliance marketed by Calor and bearing the badge with the words 'Calor Gas Approved' is not therefore in a position to know precisely how the appliance differs from, or is superior to, a similar appliance without the badge, which may be available elsewhere. Calor has no objection to making the criteria known, and we suggest that it should take steps to ensure that its distributors who market appliances provide customers with adequate information on what has been tested, as indeed should other suppliers whose appliances are Calor approved.

10.33. We noted that in Calor sales literature explaining the significance of 'Calor Gas Approved' it is stated that the expression means that an appliance has 'been tested and approved for safety and performance in Calor's own laboratories, which are specially recognised by the British Standards Institution for testing such products'. In our view this wording, particularly the use of the word 'specially', implies recognition by BSI in connection with tests for Calor approval, and is misleading in that recognition in fact relates solely to testing against a British Standard or for BS 'Safety Mark' purposes and does not relate to the laboratories making tests in connection with Calor approval. The statement, although misleading, is not one which in practice seems likely materially to affect the public's view of an appliance which is labelled 'Calor Gas Approved'; but it appears to us that the use of it is contrary to the spirit, if not the letter, of BSI's requirement for Test Houses of Assessed Capability that 'no claim, direct or indirect, shall be made by the Test House that registration relates to any services other than those set out in the Certificate of Registration and the Schedule' [ie testing in connection with certain specified British Standards] and that 'the Test House may use in documentation, brochures or advertising media, without variation, the phrase "Listed in the BSI Register of Test Houses of Assessed Capability" ' (see paragraph 6.32). This seems primarily a matter for BSI to pursue, and we understand that BSI has in fact obtained a satisfactory assurance from Calor.

10.34. A further point in relation to the expression 'Calor Gas Approved' used in advertising material for LPG appliances and in the badge affixed to appliances, is that in our view it is likely to convey to the less well informed members of the public that an appliance may not be suitable for use with any brand of LPG except Calor's. We think that a fairly high proportion of the public is in fact likely to be misled in this way. We do not wish to stipulate

precisely what alternative slogan Calor should use, but we suggest that words such as 'Approved by Calor Laboratories for use with butane' would be less misleading.

10.35. We have also seen the words 'Suitable for Calor Gas only' used in sales literature, and in our view this is misleading in the same way. Calor told us that this expression had been used only in relation to a particular cooker and that the sales literature concerned had been prepared by the manufacturer. However, the cooker is sold exclusively through Calor, and the company told us that it was arranging for the wording to be changed to 'Suitable for Butane and Propane Gases only'.

10.36. We recognise that the words 'Calor Gas' are commonly thought of by the public as meaning LPG (and particularly butane) and are not necessarily recognised as being a proprietary brand name. Nevertheless the public may well also be confused about whether some other brand of butane is different from, or identical to, Calor's butane. This may be inevitable, but we think it is regrettable that misleading statements, such as we have mentioned, should be used, particularly when they are used by the dominant supplier and tend to preserve the dominant position to the disadvantage of other suppliers.

The use of a 21 mm valve

10.37. One consequence of the concern for safety, both official and on the part of Calor, has been the adoption by Calor of a 21 mm valve on its butane cylinders. We have described in paragraph 6.36 the circumstances in which Calor adopted the 21 mm top-entry valve for its butane cylinders and in which other suppliers adopted different valves. While we applaud Calor's decision to refit a very large number of cylinders with a safer valve, we think it is regrettable from the user's point of view that there is no uniformity either of type or dimension in the valves used with butane cylinders. Although Calor's exclusive arrangement with Kosan may have contributed to the fact that other suppliers adopted different valves, it is difficult to conclude that any particular supplier was to blame for the lack of standardisation which developed. Because of the amount of capital spent in recent years in converting to safer valves, it is now too late to achieve a standard design of valve as part of this process of conversion. However, we think it important that when any further opportunity should arise, the LPG industry itself should ensure that a standard valve is adopted or, failing that, the appropriate Government department should impose it. Moreover the fact that differences in valve sizes make it more difficult for users to switch to another supplier, because of the need to acquire a new regulator, reinforces the obligation (mentioned in paragraph 10.11) which Calor, as the dominant supplier, has to ensure that supplies of its butane are always available.

Control of distribution

10.38. Apart from the Calor Centres, which are operated by Calor itself, Calor's distribution network for reference LPG consists of numerous main dealers, dealers and stockists who are independent of Calor and are in fact its customers. These distributors enter into written agreements with Calor and are required to accept a number of conditions which regulate their trade in

LPG. One such condition, which contributes particularly to Calor's ability to exercise control over distribution, is that distributors take all their supplies of LPG from Calor and do not handle LPG from any other supplier. Apart from this insistence on exclusive dealing (the implications of which we consider below in paragraphs 10.44 to 10.52) Calor will not supply LPG to every distributor who may be willing to handle it. Because of the characteristics of LPG, and particularly because of the need for safety precautions, Calor will agree to supply distributors only if, *inter alia,* they are suitably located and have adequate space and facilities for safe storage and handling of LPG in cylinders.

10.39. We accept that stipulations of this kind are necessary in the interests of safety; but they mean that Calor has almost complete control over the pattern of distribution and can refuse or terminate supply at its own discretion. In these circumstances it would not be surprising if there was some dissatisfaction among Calor's distributors, and we did in fact receive an unusually large number of complaints alleging that Calor acted towards distributors in an arbitrary and autocratic way. Supply was alleged to have been refused, or terminated, for no good reason or on the allegedly unfounded ground that premises were unsuitable or inadequate for safe storage; complaints to Calor about unsatisfactory trading were alleged to have been dismissed by Calor; and disputes with Calor executives (for example about accounting for cylinders) were alleged to have been dealt with in an unacceptable manner.

10.40. Calor recognised that such complaints were made, but claimed that they were inevitable, that the volume of them was small, and that it was taking adequate steps to deal with them. We accept that it is no part of Calor's policy to treat its distributors in an arbitrary way, but we think that in view of its dominant position Calor has an obligation to make a conscious effort to deal in a sympathetic way with such distributors' complaints as come to its notice. We think that if, for example, Calor invokes safety requirements as the basis for a refusal to supply reference LPG it should explain clearly the precise features of the alleged inadequacy.

10.41. One particular matter concerning the control of distribution, and one which was the subject of complaint to us, was that distributors of Calor LPG were required to buy all their supplies of LPG appliances through Calor, and were prohibited from buying direct from the manufacturers. Calor confirmed that this had been so, and said that the reason for the requirement was to enable Calor to monitor the sales of appliances in order to be in a position to judge the future demand for reference LPG and its own requirements of cylinders. However, Calor told us that it had now abandoned the requirement.

10.42. In our view Calor's practice of requiring its distributors to buy appliances only through itself was undesirable in that it deprived distributors of any possibility of negotiating better terms or prices with manufacturers, which might be passed on in lower prices to the public. Though there might have been some advantage to Calor in being able to monitor sales, we conclude that the practice was an act on the part of Calor attributable to the existence of the monopoly situation which exists in its favour and that on balance it operated against the public interest and may be expected to operate against the public interest if the practice is re-introduced.

Exclusive dealing

10.43. In Calor's agreements with its distributors it is stipulated that the latter shall not deal in LPG from any other supplier. There is a relatively small number of cases where, for historical reasons, Calor allows other suppliers' LPG to be handled; but in general the exclusive dealing condition appears to be strictly enforced. In addition Calor's agreements formerly contained a binding-out provision which prevented distributors from handling other suppliers' LPG for various periods after ceasing to handle Calor's; there are still some agreements with this latter condition, but Calor told us that it would not seek to enforce the condition and that it had made this clear to the distributors concerned.

10.44. The principal argument against exclusive dealing, particularly when it is insisted on by a dominant supplier, is that by foreclosing distribution outlets it may inhibit the emergence of new suppliers and restrict the ability of existing suppliers to compete. In addition it may restrict consumer choice.

10.45. We were aware that Calor is not the only supplier of reference LPG to stipulate exclusive dealing by its distributors, and it appeared to us that, if it were established that exclusive dealing prevented, restricted or distorted competition, a complex monopoly situation under section 6(1)(*c*) and (2) of the Act would exist in favour of those suppliers who did so. We put this matter to all but the smallest of those suppliers who stipulate exclusive dealing, and a summary of the arguments of those who responded is contained in Chapter 8. In considering the effect of exclusive dealing on competition and on the public interest we take into account the case presented in the arguments of Calor and others.

10.46. As to the effect on competition, we think that in principle there could be local geographical situations where exclusive dealing shuts out potential competitors because there is no alternative suitable outlet available. However, if there is any restriction of competition in this way it seems to us that the effect can only be minimal since, as Calor argued, in general there is a very large number and a wide range of existing businesses which are suitable, or could be made suitable, for distributing reference LPG. Competition from other suppliers is, therefore, not in practice likely to be materially restricted. For the same reasons we think that exclusive dealing is unlikely to lead to any significant restriction of consumer choice.

10.47. It is also possible that exclusive dealing might lead to some restriction of competition at retail level. Two retailers in the same area selling different brands of LPG on an exclusive basis would be less likely to compete with one another in price since, because valve sizes and the cost of cylinders make it difficult for users to switch from one brand to another, one retailer would not be able to win business from the other. They would be more likely to do so if both retailers sold both brands.

10.48. However, we think that there is force in the argument that exclusive dealing actually enhances competition between suppliers in this industry. Since butane and propane are homogeneous commodities, all suppliers' prices are likely to be uniform, or nearly so, and any differences would not be

likely to persist. Competition between different brands is more likely in the promotion of brand image and in such things as service, ready availability and range of cylinder sizes; and we accept that competition of this kind between suppliers is more likely to be keener if distributors are committed to buying and promoting the sale of only one supplier's LPG.

10.49. Competition may be different as a result of exclusive dealing from what it would be if there were no exclusive arrangements; but we think that in practice the difference is unlikely to be great since only few distributors would wish or have the facilities to handle LPG from more than one supplier. We do not consider that on balance there is in this particular industry any material adverse effect by way of prevention, restriction or distortion of competition.

10.50. We accept also that in the reference LPG industry there are certain arguments in favour of exclusive dealing which should be taken into account. First is the matter of safety. The safety, and good reputation for safety, of its cylinders is a matter of importance to Calor and indeed to other suppliers. A supplier does not wish his distributors to be associated with cylinders from suppliers whose safety standards may not be as high as his own. This is a reasonable commercial consideration, though insistence on exclusive dealing does not of course eliminate the danger to the public from unsafe cylinders (if there are any) since these will merely be supplied through other distributors. However, we accept that exclusive dealing probably does have a beneficial effect on safety since it enables suppliers to exercise a more effective control over the storage and handling of LPG by their own distributors. Secondly, we accept that the distribution of reference LPG to dealers and stockists would, as Calor claimed, be likely to be less efficient and more costly if its dealers and stockists did not deal exclusively with one supplier—see paragraph 8.5 (*e*).

10.51. The arguments which justify exclusive dealing in this industry are in our view valid only in relation to individual sites. A supplier would not be justified in preventing a distributor customer from dealing in another supplier's LPG at some other separate business premises of which he was also the proprietor; and to do this would be against the public interest. Subject to this, we consider that in this industry exclusive dealing has on balance no adverse effect on competition (see paragraph 10.49) and has indeed certain advantages (see paragraph 10.50), and we conclude that the practice is not against the public interest. It is therefore immaterial whether there is a complex monopoly situation under section 6(1)(*c*) and (2) of the Act.

10.52. However, the binding-out provisions in Calor's agreements, which we have referred to in paragraph 10.43, appear to us to be clearly restrictive of competition and we see no justification for them. We recognise that Calor's new agreements do not include this provision and that Calor has stated that it does not intend to enforce the provision in agreements which still include it; nevertheless we record a formal conclusion that binding-out was a step taken by Calor for the purpose of maintaining the monopoly situation which exists in its favour and that it operated against the public interest.

Refusal to allow cylinders to be refilled by other suppliers

10.53. Calor's refusal to allow its cylinders to be refilled by other suppliers of LPG is a practice which is *prima facie* restrictive since it places some restriction on the supply by other suppliers. In addition, it may on occasion prevent users from obtaining a refill from an alternative source when Calor LPG is not available. Calor, incidentally, is not the only supplier to insist that its cylinders should not be filled by others.

10.54. As we have already pointed out in connection with exclusive dealing, safety and a good reputation for safety, are important to Calor. It is essential that Calor should be able to ensure that, to avoid leaks, its cylinders and valves are effectively tested when cylinders are refilled, and also that cylinders are not overfilled; Calor can do this to its own satisfaction at its own filling stations, but it is clearly impossible if its cylinders are filled at filling stations over which it has no control. We do not wish to imply that other suppliers (or any of them) are necessarily irresponsible in their attitude to safety, but in our view Calor is justified in refusing to accept the risk, over which it would have no control, of allowing its cylinders to be filled by other suppliers. In the absence of a system of detailed and regular inspection of filling plants, we regard this as a legitimate step to protect the business.

Summary and conclusions

10.55. Calor enjoys a dominant position in the reference LPG market and, as we have said in paragraph 10.9, it seems unlikely that it will be seriously eroded in the foreseeable future. This is mainly due to the difficulty which other suppliers have in competing on other than a relatively minor scale; but there are other circumstances which, although they are justifiable in themselves, particularly on grounds of safety, or are of only minor significance individually, when taken together tend to reinforce Calor's dominant position. Exclusive dealing, the cost to a user of switching to another supplier, the refusal to allow other suppliers to refill Calor cylinders, the fact that Calor Gas is widely thought to be a commodity rather than a brand name (and that some Calor sales literature appears to support this belief), and the undoubted commercial advantages to be gained from the unique position of the Calor Laboratories are all examples of this.

10.56. We have made some criticisms of Calor, partly in connection with practices it has now abandoned and partly in connection with forms of words used in sales literature which we consider to be misleading. However, these criticisms are not in our view of sufficient importance, taken together, to merit a finding that the dominant position of Calor is itself against the public interest, bearing in mind particularly that Calor is an efficient company, its profits have not been unreasonably high and its concern for safety has been an important factor in the growing use of LPG by the public.

10.57. We conclude that:

(*a*) the monopoly which exists in favour of Calor (see paragraph 10.2) does not operate against the public interest;

(*b*) the practice of requiring distributors to buy appliances only through Calor was an action the part of Calor attributable to the existence of the monopoly situation, and it operated against the public interest—paragraph 10.42;

(*c*) the practice of binding-out was a step taken by Calor for the purpose of maintaining the monopoly situation, and it operated against the public interest—paragraph 10.52.

Recommendations and observations

10.58. We recommend that the practices mentioned in (*b*) and (*c*) of paragraph 10.57 should not be re-introduced by Calor.

10.59. We suggest that conditions relating to the Refill Authority Charge should be more prominently set out (see paragraph 10.18), that adequate information on the significance of 'Calor Gas Approved' should be provided to users (see paragraph 10.32) and that certain expressions used in sales literature should be changed (see paragraphs 10.33, 10.34, 10.35).

10.60. Finally we draw attention to the possible effect on Calor's profits of higher gas and electricity prices (see paragraph 10.25), to the desirability of ensuring standardisation in the LPG industry (see paragraph 10.37) and to the uusatisfactory situation arising from the fact that the Calor Laboratories are not wholly independent of Calor commercial interests (see paragraph 10.31).

M BROWN (*Chairman*)
H L G GIBSON
F E JONES
T P LYONS
J H RUSSELL
R G SMETHURST
J GILL (*Secretary*)

24 November 1980

APPENDIX 1

(referred to in paragraph 2.8)

Extract from the Penney Committee

Second Annual Report

Liquefied petroleum gas containers in dwellings

The explosion forces due to ignition of Liquid petroleum gas (LPG) in a room are comparable to those from town gas or natural gas. In 1977, eight incidents were reported in which explosions of LPG caused significant structural damage to dwellings compared with 42 incidents involving natural gas. Due to increased costs of electricity the consumption of LPG for heating has grown considerably in recent years.

Following the Ronan Point incident in 1968, many high rise blocks of flats throughout the country were appraised and strengthened where necessary to withstand a standard static pressure of 0·0345 N/mm^2. Where no mains gas was incorporated, or where it had been removed, it was permissible to appraise existing structures using half this standard static pressure and many high rise blocks were dealt with in this manner and in some cases no strengthening was required. The Standing Committee's concern, therefore, is that the use of LPG in those flats of large panel construction which have been appraised on the basis of no mains gas supply being present could lead to a serious incident of progressive collapse, similar to that at Ronan Point. Some local authorities aware of the risk have banned the use of LPG in high rise flats but others have taken no action.

In addition to drawing the Department of the Environment's attention to this danger, the Standing Committee had discussions with representatives of the principal national LPG suppliers, who have co-operated by sending the following instructions to all their agents:

'Although there is a Fire Prevention Guide No. 4—Safe Use of LPG in Residential Premises, published in 1976, which we support, and which gives guidance on the safe use of LPG in premises of various types, it is important to emphasise our current policy in meeting the requirements of the Code, which we ask you to implement as follows:

(i) *High rise blocks of flats*
LPG should not be used in high rise flats, either in cylinders or piped from the outside if, on safety grounds, the mains gas has been disconnected or a supply refused.

(ii) *Flats and maisonettes of traditional construction over 2 storeys high*
LPG can be piped in from the outside but LPG cylinders should not be allowed inside unless the block has alternative means of escape and has balcony or deck access which can be used for cylinder changing. Irrespective of the above, cylinders should not be used above the fourth storey and lifts must not be used for the transportation of cylinders.'

However the Standing Committee is concerned that many local authorities are still unaware of the risk.

APPENDIX 2

(referred to in paragraph 4.9)

List of British Standards relating in whole or in part to LPG burning appliances

BS 2491 : 1963	Domestic cooking appliances for use with liquefied petroleum gases
BS 2773 : 1965	Domestic single-room space heating appliances for use with liquefied petroleum gases
BS 2883 : 1964	Domestic instantaneous and storage water heaters for use with liquefied petroleum gases
BS 2977 : 1958	Domestic lighting appliances for use with liquefied petroleum gases
BS 3879 : 1969	Portable liquefied petroleum gas appliances operating at vapour pressure from small LPG containers
BS 3929 : 1965	Domestic solid fuel ignition pokers and portable undergrate ignition burners for use with commercial butane
BS 4096 : 1967	Non-domestic space heaters burning liquefied petroleum gases
BS 4104 : 1967	Catering equipment burning liquefied petroleum gases
BS 1945 : 1971	Fireguards for heating appliances (as it applies *inter alia* to fireguards made to BS 2773 : 1965)
BS 3016 : 1972	Pressure regulators and automatic changeover devices for liquefied petroleum gases
BS 3107 : 1973	Small incinerators (as it applies *inter alia* to fireguards for appliances made to BS 2773 : 1965)
BS 5258 : —	Specification for safety of domestic gas appliances Part 1 : 1975 Central heating boilers and circulators Part 2 : 1975 Cooking appliances Part 3 : 1975 Drying cabinets Part 4 : 1977 Fanned-circulation ducted-air heaters Part 5 : 1975 Gas fires Part 6 : 1975 Refrigerators and food freezers Part 7 : 1977 Storage water heaters Part 10 : 1980 Flueless space heaters (excluding catalytic combustion heaters (3rd family gases) Part 11: 1980 Flueless catalytic combustion heaters (3rd family gases) Part 12 : 1980 Decorative gas log and other fuel effect appliances (2nd and 3rd family gases)

BS 5314 : —	Specification for gas heated catering equipment Part 1 : 1976 Ovens Part 2 : 1976 Boiling burners Part 3 : 1976 Grillers and toasters Part 4 : 1976 Fryers Part 5 : 1976 Steaming ovens Part 6 : 1976 Bulk liquid heaters Part 7 : 1976 Water boilers Part 8 : 1979 Griddle plates Part 9 : 1979 Boiling pans Part 11: 1979 Hot cupboards Part 12: 1979 Bains-marie
BS 5386 :	Specification for gas burning appliances Part 1 : 1976 Gas burning appliances for instantaneous production of hot water for domestic use (EN 26) Part 2 : 1979 Mini water heaters (3rd family gases) Part 3 : 1980 Domestic cooking appliances burning gas (EN 30)
BS 5482 :	Code of practice for domestic butane—and propane—gas burning installations Part 1 : 1979 Installation in permanent dwellings Part 2 : 1977 Installation in caravans and dwellings Part 3 : 1979 Installation in boats, yachts and other vessels
BS 5494 : 1978	Specification for gas taps for domestic and catering appliances
BS 5809 : 1980	Safety and efficiency of the gas heating equipment of commercial dishwashing machines
BS 4201 : 1979	Specification for thermostats for gas-burning appliances

Note: LPG is a 3rd family gas. Town gas and natural gas are, respectively 1st and 2nd family gases.

APPENDIX 3

(referred to in paragraphs 5.14, 5.17 and 6.72)

THIS COPY **MUST** BE HANDED TO THE CALOR GAS DRIVER AS SOON AS POSSIBLE AFTER COMPLETION

CALOR Gas

Issued by:
Calor Gas Limited
Calor House
Windsor Road
Slough SL1 2EQ

V.A.T. Registration No.
207 6109 84

CYLINDER REFILL AUTHORITY AGREEMENT

(FORM 167)

Dealer's Code No.

THIS FORM MUST BE COMPLETED IN BLOCK LETTERS, DATED AND SIGNED BY THE USER AND BY THE DEALER

NOTE: The User should keep this form in a safe place as an appropriate refund of Authority Charge in accordance with the provisions of Condition 7 on the back of this form may only be made if this Agreement is produced to an authorised Calor Gas Dealer

For Terms and Conditions see overleaf

FULL NAME AND ADDRESS OF USER (BLOCK LETTERS)

Name

Address

District

Town

County

Post Code

THE RED COPY OF THIS FORM MUST BE HANDED TO THE USER

THIS IS NOT A TAX INVOICE

THE UNDERSIGNED USER UPON PAYMENT OF THE REFILL AUTHORITY CHARGE SET OUT OPPOSITE AGREES TO USE THE CALOR† GAS CYLINDERS DESCRIBED HEREIN IN ACCORDANCE WITH THE TERMS AND CONDITIONS SET OUT OVERLEAF.

Date

USER'S SIGNATURE

USER'S NAME IN BLOCK LETTERS

NOTE: If the USER is a COMPANY or FIRM, this form must be signed by a duly authorised person stating his office. (e.g. Director, Proprietor, Partner, Purchasing Officer, etc.)

OFFICE OF SIGNATORY

TRADING NAME and ADDRESS OF DEALER (BLOCK LETTERS)

							£	p
BUTANE (71)	TYPE	4.5	15	7 Steel 71	7 Al. 70	• each		
	QTY							
BUTANE (71)	TYPE					• each		
	QTY							
PROPANE (72)	TYPE	3.9	13	19	47	• each		
	QTY							
PROPANE (72)	TYPE	12 Auto	18 Auto			• each		
	QTY							
SMALL–PRIMUS (87)	TYPE	2000	2012			• each		
	QTY							
SMALL–SUNDRY (86)	TYPE	4 (D/S)	2 Hotel			• each		
	QTY							
						TAXABLE VALUE		
						V.A.T. @ RATE		
						TOTAL VALUE		

Calor † Gas Cylinders remain at all times the property of Calor Gas Limited and Calor † Gas Cylinders must only be used in accordance with the Terms and Conditions printed overleaf.

New Calor † Gas Users should read the leaflet 'Using Calor Gas Safely' which is available free from Calor Gas Dealers.

† *CALOR is the Registered Trade Mark of Calor Gas Limited*

TERMS AND CONDITIONS OF CALOR REFILL AUTHORITY

1. The Customer purchasing CALOR† Gas (hereinafter referred to as "Gas" or "the Gas") from CALOR GAS LIMITED (hereinafter referred to as "the Company") will accept the Gas in a CALOR† Cylinder (hereinafter referred to as "the Cylinder" or "Cylinders") and the Company for the purpose of enabling the Customer to obtain supplies of the Gas during the currency of this Agreement and in consideration of the Refill Authority Charge specified overleaf hereby authorises the Customer and gives him the right to obtain in Great Britain from Calor Centres, Dealers, Stockists or any other supply point approved by the Company, a Cylinder filled with Gas in exchange for a Cylinder of similar size to that specified on this Refill Authority Agreement in good condition upon payment only for the Gas and subject always to availability of supplies.
2. **Cylinders remain the property of the Company at all times and are only to be filled by the Company.** They must not be sold, hired, assigned (other than pursuant to Clause 9 hereof), transferred, mortgaged, lent or abandoned, nor must they be damaged, defaced in any way, decanted, filled, tampered with, or used for any purpose other than as a container for CALOR† Gas. The Customer will retain absolute possession and control of every Cylinder in his charge (which expression includes every part thereof and every replacement by the Company), will not hold himself out as the owner or hirer thereof, and will not part with Cylinders except in accordance with this Agreement.
3. The Company will use its best endeavours to make available filled replacement Cylinders but nothing in this Authority shall be construed as imposing upon the Company in any way a legal obligation to supply replacement Cylinders to the Customer or to let or hire Cylinders to the Customer, now or at a future date.
4. The Customer will at all times permit any CALOR† Gas Dealer or representative of the Company to inspect or test the Gas installations, fittings, appliances or Cylinders thereon and to remove Cylinders together with any Gas therein if in the opinion of the Company they are not safe or in good condition (providing in such case a replacement Cylinder save in the case of wilful damage) or the installation, fitting or appliance is unsafe and, upon termination of this Authority for whatever reason to remove the Cylinder or Cylinders then in the possession of the Customer. The Customer irrevocably authorises such CALOR† Gas Dealer or representative of the Company to enter upon his property for such purposes. Nothing in this Agreement shall be construed as imposing upon the Company an obligation to maintain in good condition any Cylinders in the Customer's possession.
5. The Company will at all times check, maintain and where necessary repair its Cylinders and will ensure that any Cylinder filled or refilled with Gas by the Company is at the time it leaves the Company's possession suitable for Gas and further that it will comply with all and any statutory or other requirements in connection with the periodic testing of any Cylinder returned to it.
6. In the event of the Customer damaging beyond repair a Cylinder or part thereof, or if the Customer destroys, loses or otherwise deprives the Company of the use of a Cylinder, then the Company shall forthwith be entitled (either directly or through a Dealer or Stockist) to charge the Customer as compensation for loss of use of the Cylinder the Refill Authority Charge for the time being in force. Such payment shall in no way confer upon the Customer any right or title to any Cylinder which shall remain the property of the Company.
7. Subject to compliance by the Customer with all the terms hereof the Authority contained herein will remain in effect for 50 years. If at any time the Customer does not wish to avail himself of this Authority and wishes to terminate this Authority he shall forthwith return any Cylinder then in his possession complete and in good order to a Calor Centre, Dealer or Stockist and providing all the terms and conditions of this Authority have been complied with then the Customer will be entitled upon presentation of this document to the following refund:-

   within 1 year from the date of this Authority 70% of the Refill Authority Charge;
   within 2 years from the date of this Authority 60% of the Refill Authority Charge;
   within 3 years from the date of this Authority 50% of the Refill Authority Charge;
   within 4 years from the date of this Authority 45% of the Refill Authority Charge;
   within 5 years from the date of this Authority 40% of the Refill Authority Charge;
   within 6 years from the date of this Authority 35% of the Refill Authority Charge;
   within 7 years from the date of this Authority 30% of the Refill Authority Charge;
   over 7 years and within 12 years from the date of this Authority 25 % of the Refill Authority Charge.
8. This Authority may be terminated either by the Customer at any time without notice in accordance with Clause 7 hereof or by the Company forthwith without notice if the Customer:-
   (a) commits an act of bankruptcy;
   (b) being a Limited Company goes into liquidation other than a voluntary liquidation for the purpose of reconstruction, or
   (c) fails to observe any of the terms and conditions contained herein.
9. This Authority is only assignable upon the written consent of the Company which shall not be unreasonably withheld where the Customer applies directly to the Company with the number and date of his Cylinder Refill Authority Agreement stating the name of the Dealer from whom the Cylinder(s) was/were originally obtained, the number of size(s) of such Cylinder(s) and the Customer's name and address at the date of issue.
10. This Authority is governed by and construed in accordance with English Law.

†CALOR is the Registered Trade Mark of Calor Gas Limited.

APPENDIX 4(a)

(referred to in paragraph 6.26)

Calor Kosangas Northern Ireland Limited

This company's Authorised Dealer Stockist Agreement provides *inter alia* as follows:

'The Dealer hereby covenants with the Company . . .

3 (*j*) Not to permit

1. Directly or indirectly, Calor/Kosangas cylinders or regulators to be used except in connection with Calor/Kosangas; Calor/Kosangas cylinders or regulators and Calor/Kosangas approved* appliances . . .

(*k*) 1. Not to engage directly or indirectly in the sale, distribution or advertising of any other brand or brands of liquefied petroleum gas or any type or types of liquefied petroleum gas-burning appliances during the term of this agreement and for a period of twelve months after the termination of this Agreement, nor to engage directly or indirectly in the sale, distribution or advertising of any other brand or brands of liquefied petroleum gas or any type or types of liquefied petroleum gas-burning appliances, within a twenty mile radius of his premises, except with the prior written consent of the Company.

2. Not to purchase, or otherwise obtain Liquefied Petroleum Gas or cylinders, or liquefied petroleum gas-burning appliances or equipment, from any person, Company or Corporation other than the Company [Calor Kosangas Northern Ireland Limited], during the term of this Agreement.'

'5. It is mutually covenanted as follows:. . .

(*d*) Either party hereto has the right to terminate this Agreement by giving three months' notice in writing to the other . . .'

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* The company has told us that 'Appliances are sold by Calor Kosangas which have not necessarily been "approved" at Addlestone. However, they are, of course, tested for safety etc by the company's own staff at Belfast.'

APPENDIX 5

(referred to in paragraphs 6.81 and 10.23)

The Calor Group Limited: Trading results for the supply of reference LPG

			£m		
Years ended 31 March	*1975*	*1976*	*1977*	*1978*	*1979*
Sales of gas and other revenue *	20·9	29·5	41·0	53·8	64·6
Less cost of gas sales:					
Raw materials	6·7	9·6	15·1	20·8	23·6
Operating costs	6·8	8·9	12·0	17·6	20·6
	13·5	18·5	27·1	38·4	44·2
Gas gross profit	7·4	11·0	13·9	15·4	20·4
Net revenue from appliances†	1·7	2·2	2·4	2·6	3·0
	9·1	13·2	16·3	18·0	23·4
Less overheads:					
Selling	3·1	4·1	4·9	6·1	7·7
Divisional and Group charges (net)	2·3	2·7	4·4	5·1	6·4
	5·4	6·8	9·3	11·2	14·1
Net profit before interest:					
Historic cost basis	3·7	6·4	7·0	6·8	9·3
CCA basis	N/A	N/A	4·5	3·9	6·6
Expressed as a percentage of sales:‡	%	%	%	%	%
Historic cost basis	12	16	12	9	11
CCA basis	—	—	8	5	8
Total gas sold in thousand tonnes	143·4	165·9	200	238·1	277·8
Net profit per tonne	£25·49	£38·79	£34·80	£28·46	£33·62

* 'Other revenue' includes that portion of refill authority receipts attributable to each year.
† Best estimate of revenue from sales of appliances for use with reference LPG.
‡ Based on sales which include the value of appliances sold.

APPENDIX 6

(referred to in paragraphs 6.81 and 10.23)

The Calor Group Limited: Return on capital employed for the supply of reference LPG

Years ended 31 March	*1975*	*1976*	*1977*	*1978*	*1979*
			£m		
Capital employed at book values					
Current assets	9·5	10·1	16·1	21·8	23·5
Less current liabilities	3·6	5·5	7·3	10·9	9·1
Net current assets	5·9	4·6	8·8	10·9	14·4
Deferred assets	—	—	—	1·9	0·7
Fixed assets at written down value	18·4	21·6	27·4	40·3	48·0
Capital employed:					
At year-end	24·3	26·2	36·2	53·1	63·1
Average during year	—	25·3	31·2	44·7	58·1
Net profit before interest	3·7	6·4	7·0	6·8	9·3
Return on capital employed					
Book value basis	15%	25%	22%	15%	16%
Average over 5 years			19%		
Capital employed on a CCA basis:	N/A	N/A	51·7	70·3	80·2
Averaged			—	61·0	75·3
CCA net profit before interest			4·5	3·9	6·6
Return on CCA capital employed			9%	6%	9%
The above calculations exclude the value of goodwill as assessed by Calor at	1·2	1·0	*£m* 0·8	0·7	0·5

Notes:

1. The returns in this table are for reference products including directly related activitie such as revenue from the sale of appliances for use with reference LPG and hire o cylinders etc.
2. The figures herein relate to part only of Calor's business which the company regards a indivisible. Allocations have involved assumptions which in our opinion are appropriat to the circumstances.

APPENDIX 7

(referred to in paragraphs 6.31, 9.14 (vii) and 10.31)

Instances of priority in the testing of appliances at Calor Central Laboratories: April 1977 to June 1980

The following is an extract from a letter dated 8 August 1980 sent to the Commission by The Calor Group Limited.

Below are listed the thirty-one assignments which were given priority since April 1977, out of a total of 1,719 assignments:—

Appliance	*Date of Priority*
Celeste LP 800 Fire	22.3.77
Commodore 80	29.3.78
HD1980T Camplex Greenhouse Heater	9.11.78
Bistro 2380 18 Grill	27.11.78
Bistro 2380 01 Grill	27.11.78
R2250 Balanced Flue Convector Heater	29.12.78
GG 1200 BBQ	3.1.79
Charmglow HEJ	3.1.79
Charmglow CC1	3.1.79
Charmglow AMK	3.1.79
975 Cabinet Heater	8.1.79
Weber Kettle	30.1.79
Namco Patio BBQ	8.2.79
Caroline Plus S	8.3.79
Calor Engineering 100 Reg	8.3.79
Spectrum	27.3.79
Leamington	30.3.79
Main 2020 Hotplate	2.4.79
Main 2020 Grill	2.4.79
Main 2020 Oven	2.4.79
Gimeg 156 S/O Reg	2.5.79
Stermaglow	5.6.79
Guardian	11.10.79
PC 4000	30.10.79
Broseley Blazing Log Fire	7.12.79
Valorglo 377	12.2.80
Happy Cooker BBQ	13.2.80
Rinnai RMH3	1.4.80
Aladdin/Mepamsa M82 Cabinet Heater	10.4.80
Superglo with Thermostat	17.4.80
Optimus Thermostatique	8.5.80

The following considerations were taken into account when priority was given:—

1. Innovative design—including safety, efficiency and control features, eg Guardian, D.I.P. 975, Valorglo 377, Optimus Thermostatique, Broseley Blazing Log Fire, Superglo with Thermostat, Rinnai RMH3.
2. The introduction of Barbecues, ensuring a full range available for the Summer Season, eg Charmglow HEJ/CC1/AMK/GG1200, Weber Kettle, Bistro 2380 18/01 Grills, Namco Patio, Happy Cooker.
3. Minor modifications/name changes of already approved Appliances—to avoid production stoppages, eg Commodore 80, Camplex Greenhouse Heater, Stermaglow.
4. To fill gaps in Product range, eg Main 2020 Hot Plate/Grill/Oven, PC4000, Caroline, Leamington, Spectrum, Celeste and R2250.

   N.B. Each of the two similar brands—Flavel Caroline (exclusive to Calor) and Flavel Leamington (available to entire market) were both given priority.
5. To find alternative to cover temporary shortages of Kosan 182 Regulators, eg Calor Engineering 100 Regulators and Gimeg 156 Regulators.
6. British Standards Institution requests, eg Aladdin/Mepamsa M82 Cabinet Heater.

All the Cookers in Section 4 above (Main 2020 Hot Plate/Grill/Oven, PC4000, Caroline, Leamington and Spectrum) which were given priority, were submitted to Central Laboratories by the BSI for Safety Mark certification.

All the remaining Appliances were beyond the scope of the then published Safety Mark standards and were tested to the relevant British Standards/ draft British Standards or, in the absence of these, the Calor Standards which are formulated to be compatible with current British Standards.

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