

- I3. Plastics Division,
Imperial Chemical Industries Ltd.,
Bessemer Road,
Welwyn Garden City,
Herts:
- Chemical Kinetics.
Phase Equilibria.
- Particularly with respect to fluid systems containing organic high polymers at pressures up to a few kilobars.
- Research Director.
- Cold forming of metals - extrusion, wire making, deep drawing, upsetting. Compaction of metal powders into electrodes for arc melting or electron beam melting.
- D.E. Yeomans
L.R. Hawtin
- Autoclaves with fittings for stirrers, electrodes and windows, for temperatures to 300°C and pressures of a few kilobars. Supporting gas compression equipment.
- I4. ✓ Research Dept.,
Imperial Metal Industries (Kynoch) Ltd.,
Witton,
Birmingham 6.
Tel. Birchfields 4848.
- Cold forming of metals - extrusion, wire making, deep drawing, upsetting. Compaction of metal powders into electrodes for arc melting or electron beam melting.
- D.E. Yeomans
L.R. Hawtin
- Experimental hydrostatic extrusion apparatus (room temperature). Max. pressure 17 kb. Max. back pressure 5.5 kb. Container dia. 1½". Max. billet length 4".
- K1. ✓ University of Kent at Canterbury,
Canterbury,
Kent.
Tel. Canterbury 66822
ext. 234
- Investigation of the nuclear magnetic resonance relaxation time of liquids (using a pulsed method) to see how this varies with temperature and pressure.
- Mark C. Gough
S.G. Powles (Prof.)
- The N.M.R. equipment consists basically of a permanent 5000 gauss magnet, and electronic apparatus which produces pulses 600 volts in amplitude. The pressure range is 0 - 2 kb and the temperature range is from 0°C to 250°C.
- K2. Kenewe Research Press Co.,
91 South Street,
Greenock,
Renfrewshire.
Tel. Greenock 23027.
- Design and manufacture of high tonnage presses with Towler Hydraulic Equipment. Research into compaction of the known abrasive powders and construction of appropriate high pressure devices.
- K.D. Cochran
E.M. Haldane
- 500 ton press.
Cold compression of powders in steel devices to 25 kb.
- L1. Dept. of Geology,
University of Leeds,
Leeds 2.
Tel. Leeds 31751.
- Geochemical studies :-
The melting behaviour of rocks at high pressures, and especially the composition of the liquid phase. The solubility of H₂O and CO₂ in silicate melts.
- P.G. Harris
D.W. Williams
- Hydrothermal equipment - 4 kb and 1000°C or 1 kb and 1200°C.
Internally-heated pressure vessel - 3 kb and 1500°C.
- L2. ✓ Dept. of Physics,
University of Leeds,
Leeds 2.
Tel. Leeds 31751.
- Study of the transport properties (electrical resistivity, thermoelectric power etc.) of simple metals and alloys under pressure.
- J.S. Dugdale (Prof.)
- Pressures up to 4 kb in the temperature range from 2 to 300°K. Helium gas, and at the lowest temperatures, solid helium are used as the pressure transmitting medium.

<u>Organisation</u>	<u>Field(s)</u>	<u>Equipment</u>
L3. ✓ School of Chemistry, University of Leeds, Leeds 2. Tel. Leeds 31751.	Equipment design. Hydrothermal systems and phase studies, electrical studies, phase equilibria, and solid state reactions at pressures above 2 kb. X-ray studies. ✓ R.S. Bradley ✓ D.C. Munro	Hydrothermal reaction vessels up to 4 kb and 900°C. Uniaxial Bridgman anvil presses up to 80 kb and 800°C. Internally heated piston cylinder apparatus up to 100 kb and 2000°C. Diamond cylinder X-ray apparatus up to 12 kb (room temperature).
L4. (a) ✓ Dept. of Chemical Engineering and Chemical Technology, Imperial College, Prince Consort Road, London S.W.7. Tel. KENSington 5111.	(a) Pressure Measurement to 15 kb. (b) P-V-T Properties and Phase equilibria. (c) Transport Properties (thermal conductivity, viscosity). ✓ K.E. Bett	Pressures up to about 15 kb, temperatures mainly in range 25 to 250°C although in some applications may be as high as 2000°C.
(b)	Thermodynamic and transport properties of gases at high temperatures and pressures. K.E. Bett ✓ G. Saville	Temperatures of up to 1800°C, pressures up to 1 kb. Volume of hot zone ~ 500 cm ³ .
L4. (c) Dept. of Chemical Engineering and Chemical Technology, Imperial College, Prince Consort Road, London S.W.7.	Physical studies on liquids. E. McLaughlin.	Viscosity measurements in range 1 - 10 kb and temperatures in the range 25 - 100°C. Thermal conductivity measurements in range 1 - 7.5 kb and temperatures in the range 25 - 250°C.
(d) ✓ Tel. KENSington 5111.	Chemical reactions (kinetics and equilibria), with emphasis on polymerisation reactions. Some measurements of related physical properties (e.g. melting curves, electrical conductances). ✓ K.E. Weale	Steel vessels pressurised via hydraulic intensifiers. Max. pressure 15 kb, usual temperature range 25° - 125°C. Some exploratory work with tetrahedral anvil equipment on chemical reactions (to ca. 50 kb, 200° - 600°C).
L5. ✓ Dept. of Geology, Imperial College, Prince Consort Road, London S.W.7. Tel. KENSington 5111	Hydrothermal synthesis (usually 3 or 4 component silicate systems) and stability relations of common rock-forming minerals. J. Nolan G. Borley	Tuttle cold-seal pressure vessels (Haynes # 25, £ R.41.). Pressure 0 - 5 kb. Temperature 0 - 900°C. Higher pressure equipment is being obtained. At present equipment in the Geology Dept., Manchester University is used for higher pressure work