

✓
L6. Dept. of Mechanical Engineering,
Imperial College,
Prince Consort Road,
London S.W.7.
Tel. KENsington 5111

Hydrostatic and fluid-to fluid
extrusion. Forging against hydro-
static pressure. Properties of
materials and fluids under high
pressure. Fatigue studies under high
pressure conditions.
Equipment design, pressures up to
15 kb.

J.M. Alexander (Prof.)
B. Lengyel
D.J. Burns

L6. Dept. of Mechanical Engineering,
Imperial College.

(1) General Purpose press, having one vertical
300T ram, with hydraulic accumulator drive up
to 15 ins/sec. ram speed, 3 horizontal rams
capable of 200 tons push, 100 tons pull. Hydraulic
pump drives giving up to about 3 in/sec. independ-
antly controllable ram speed in each ram available.
Extrusion press container can be heated up to
600°C.

(2) 16000 ft. lb. U.S. Industries high energy rate
press, up to 60 ft./sec. platen speed.

(3) Bristol thick-cylinder repeated internal
pressure fatigue machine to 4kb at 500 c/m
and four 4 kb intensifiers.

(4) Containers pressurised on the lines
suggested by Bridgman. Diameters $1\frac{1}{2}$ " and $\frac{3}{4}$ ".
Max. pressure (23) kb and 8 kb.

(5) Associated instrumentation, e.g. U.V.
recorder, Fastax camera giving up to 20,000
frames/second.

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L7.(a) Physics Dept.,
King's College,
Strand,
London, W.C.2.
Tel. TEMple Bar 5454

Diffusion doping of diamonds,
particularly with aluminium.

✓ E.C. Clark
E.C. Lightowers

Tetrahedral anvil apparatus (belonging to
N.P.L.) 40 - (50) kb, 1000 - 1500°C.

(b) ✓

Solid state piezo-spectroscopic
studies (diamond).

✓ P.A. Crowther
E.C. Lightowers

80°K - 450°K cell for the application of
uniaxial stress to specimens up to the breaking
stress (~ 20 - (30) kb). Primary pressures
are derived from a screw and transmitted by
oil, to act on the specimen via tungsten carbide
pistons.

(c)

Spectroscopic studies. ✓

✓ W.F. Sherman
M.A. Cundill

Modifications of Drickamer type optical cells
0 → (50) kb; 77°K → 450°K.

| <u>Organisation</u> | <u>Field(s)</u> | <u>Equipment</u> |
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| L8. ✓ Metallurgy Dept., Royal School of Mines, Prince Consort Road, London, S.W.7. Tel. KENSington 5111. | Gas - molten silicate equilibria. Chain length distribution in molten phosphates. High pressure methylation. E.H. Baker J.H.E. Jeffer | Bridgman Press. (200 ton). 12 kb. CO ₂ pressure vessel under construction. |
| L9. Sir John Cass College, London University, London, E.C.3. Tel. BISHopsgate 7561 ext. 32. | Oxidation of metals - study kinetics of process and influence on semi- conducting properties of the oxides. P.M.G. Draper B.D. Barker | 1 to 1000 bars total pressure. Room to 400°C. |
| L10. ✓ Dept. of Chemical Crystallography, University College, Gower Street, London, W.C.1. Tel. EUSon 7050 ext. 445 | HP/HT X-ray crystallographic studies; including crystal structure determin- ations, phase transitions and thermal expansion measurements under pressure of minerals associated with diamond. ✓ H.O.A. Meyer ✓ H.J. Milledge | HP/HT X-ray diffraction apparatus of piston and cylinder type using B ₂ C as the cylinder. p - 30 kb. T ~ 1000°C. |
| L11. ✓ Dept. of Geology, University College, Gower Street, London, W.C.1. Tel. EUSon 7050 ext. 455 | Physical studies at high temperatures, and particularly those relevant to mechanical properties of solids. ✓ S.A.F. Murrell | Not yet constructed. Pressure range 0 - 30 kb (though the maximum may be limited to 15 - 20 kb after further consideration of design problems), temperature range 0 - 1500°C (again the limit may be 1200 - 1300°C). Facilities for producing accurately known non-hydrostatic stresses. |
| L12. Chemical Engineering Dept., Loughborough College of Technology, Loughborough, Leics. Tel. Loughborough 3171 | Chemical equilibria studies. T. Glover D.C. Freshwater (Prof.) | 250 ml. batch reactor. Pressure 1 kb. Temperature 325°C. |