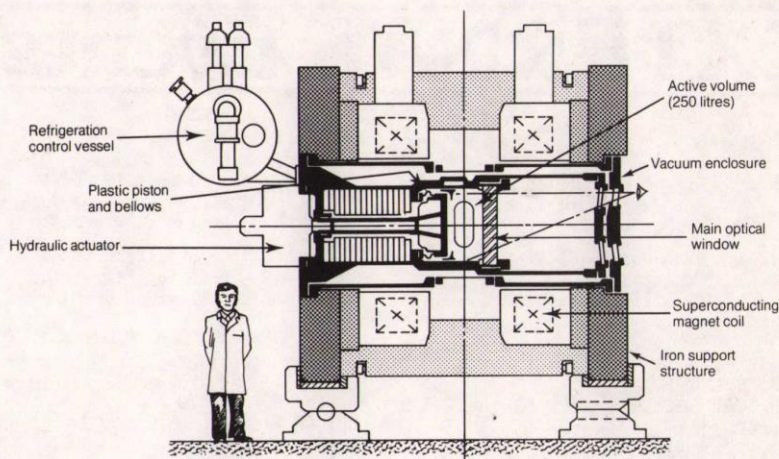


RCBC Progress

The Laboratory is designing and constructing a rapid cycling bubble chamber (RCBC) for the CERN Laboratory in Geneva. The chamber will be the target and vertex detector for the European Hybrid Spectrometer - which is to be used for particle physics research at the CERN super proton synchrotron.

A sketch of the chamber is shown in the figure. Superconducting coils produce a magnetic field of 3.0 Tesla over the chamber volume. The massive iron structure acts as a support and provides inertia to minimise the movements caused by the hydraulic expansion system of the bubble chamber.



Comings & Goings

Major components of the RCBC are arriving at the Laboratory, even though their presence may be only transitory. The 120 tonne iron structure (mentioned in *Bulletin 20*, November 1978) has now been installed and aligned in the SPS Northern Experimental Area at CERN.

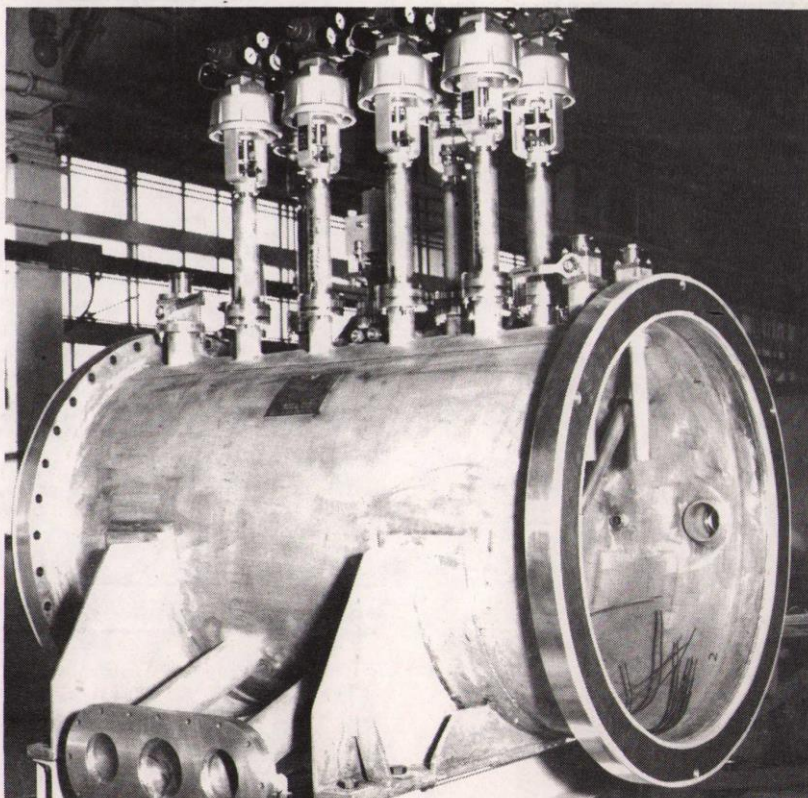
The refrigeration control vessel was accepted in January and after the trial fitting of radiation shields has been sent out for installation of the pipework. This vessel contains the control valves which distribute cold helium gas at 18°K from the 1 kilowatt refrigerator which has been installed at CERN for cooling, filling and controlling the chamber. The valves will be remotely controlled by a largely automatic system.

The chamber body is constructed of special stainless steel forgings. The machining of the body and various components such as cold valves has been completed and preparations are being made for welding the assembly together.

The refrigeration control vessel. ➡

(Continued on page 3)

Schematic sectional view of the Rapid Cycling Bubble Chamber for the European Hybrid Spectrometer at the CERN SPS. The view is seen from the direction of the incident particle beam.



INTERNAL Events

HEP SEMINARS

R61 CONF RM - 1100 hrs

25 April: R G Roberts/RL
"QCD Analysis of Moments
of Structure Functions in
Electron and Muon
Experiments."

NIMROD LECTURES

LECTURE THEATRE - 1130 hrs

30 April: Dr R Horgan/CERN
"Large p_T ; QCD ...
and CIM Phenomenology"

COMPUTING SEMINARS

COLLOQUIUM R27 - 1400 hrs

24 April: Prof. B Randell/Newcastle
"The History of Computing"

8 May: Mr C J Kennington/U.C.L.
"EUCLID - The UCL General
Purpose System of Linked
GEC 4082 Computers".

EXTERNAL Events

N.P.D. COLLOQUIUM

AERE HARWELL - 1530 hrs

26 April: Dr D B Gayther/AERE
(H8) "An Experimentalists View
of Neutron Capture".

3 May: Dr S Durrani/Birmingham
"Oklo Phenomena - a
Prehistoric Natural Reactor"

THEO. PHYS. SEMINARS

QMC - 1615 hrs

23 April: Dr M J Duff/Imperial
"Self Duality and Super-
gravity"

30 April: Dr B Gyorffy/Bristol
"Tunneling States in
Metallic Glasses".

THEO. PHYS. SEMINARS.

AERE HARWELL - 1400 hrs

27 April: Dr B K Ridley/Essex
"Cross-sections of
Impurities in Semi-
conductors".

8 May: Dr C M Sayers/M.P.D.
"Bonding of Transition
Metal Surfaces".

H.E.P. SEMINARS

DAMTP CAMBRIDGE - 1500 hrs

27 April: M Green/Southampton
"Heavy Higgs Mesons and
Radiative Corrections to
Weak Interactions"

UNIVERSITY OF OXFORD

HALLEY LECTURE '79

LECTURE THEATRE. UNIV. MUSEUM - 1700 hrs

8 May: A Hewish
"Pulsars"

OVERSEAS Visits

K Paler to CERN from 23 April - 1 May
to work on experiment NA13 - LEBC.
MAR Kemp to CERN from 24 - 28 April
and 30 April - 4 May to work on
experiments WA4 and WA57.

A Astbury to Fermilab USA from
24 - 28 April to attend symposium and
for discussions.

[D A Gray to DESY from 26 - 27 April]
for official opening of PETRA.

D Clarke to DESY from 26 April - 5 May
to work on JADE experiment.

B R Diplock and L G Denton to CERN
from 26 - 27 April for discussions on
EMC.

J A Blissett and B R Payne to DESY
29 April - 4 May for installation of
TASSO experiment.

G P Gopal to SLAC USA from 1 May -
1 June for data taking on SLAC pN
experiment.

Lost & Found

Sums of money were found in Buildings
R2 and R25 prior to the Easter holiday.

Also a gentleman's scarf was found in
the Restaurant.

Enquiries to Miss M E Fry, Personnel
Group R20, extension 495.

Christian Fellowship

The next meeting of the Fellowship
will be on Thursday 26 April at
12.40 p.m. and will take place in the
Lecture Theatre where the film
"The Sounds of Love" will be shown.
All are welcome to attend.

This is a film about women that every
man should see. It is an absorbing
documentary that has a magnetic appeal
to both men and women, as it looks
into the lives of Corrie Ten Boon
Maria Von Trapp and Dale Evans.

Dale Evans (wife of Roy Rogers)
provides tender moments of insight
into deep family problems. Maria Von
Trapp, the real Maria from 'The Sound
of Music' testifies with humour,
charm and sensitivity. Corrie Ten
Boon radiates heroism through Nazi
tragedy.

On Thursday 3 May, the monthly prayer
meeting will be in the R2 Conference
Room at 12.35 p.m.

Sales to Employees

The Sale of scrap metal/plastics
as set out in RLN 12/75 will be
made on 4 May and 18 May at the
scrap compound, rear of R40 from
1200-1230 hrs.

Visits by Parliamentary Candidates

The three candidates for the Abingdon
constituency will address members of
staff in the Lecture Theatre on the
following dates:-

Monday 23 April 1230-1330 hrs	Andrew Popper - Labour
Friday 27 April 1300-1400 hrs	Ian Blair - Liberal
Tuesday 1 May 1230-1330 hrs	Tom Benyon - Conservative

Rutherford Wives

MAKE IT A DATE to come along to the
May Coffee Morning at The Cosener's
House on Thursday 10 May between
10.30 am and 12 noon.

For further information please
contact Gillian Litt (Abingdon 26009)
or Dorothy Gibson (Abingdon 25250).

Film Badge Notice

Period 5 commences Monday 23 April.
Colour strip BROWN for beta-gamma
films. Please change your films
promptly and return old ones.

RCBC (continued from Page 1)

Probably the most novel feature of the Chamber is the glass-reinforced plastic piston and bellows assembly, which forms the heart of the Chamber expansion system.

The Bellows was featured in *Bulletin 17, 1978*, and since that time the piston has been constructed by the Chemical Technology Group at the Laboratory.

The manufacture of this large and complicated shape was accomplished by regarding the piston as being composed of 3 main sections and building these from over 400 separately cut and accurately shaped layers of glass fabric. A total length of 350 metres of glass fabric was then required in order to consolidate these 3 sections. As manufactured the piston weighed approximately 80Kg.

The final step in the Piston/Bellows Saga was the bonding together to form a vacuum tight seal that will survive under the operating conditions of low temperature and high loads.

The completed assembly is shortly to be shipped to CERN for extensive cyclings at low temperatures.

For the optical system, both illumination and camera drive units have been successfully tested for millions of cycles at frequencies in excess of the specified figure of 15 Hz. All the elements for the special telecentric lenses have been delivered and the lenses are being assembled at Imperial College, London.

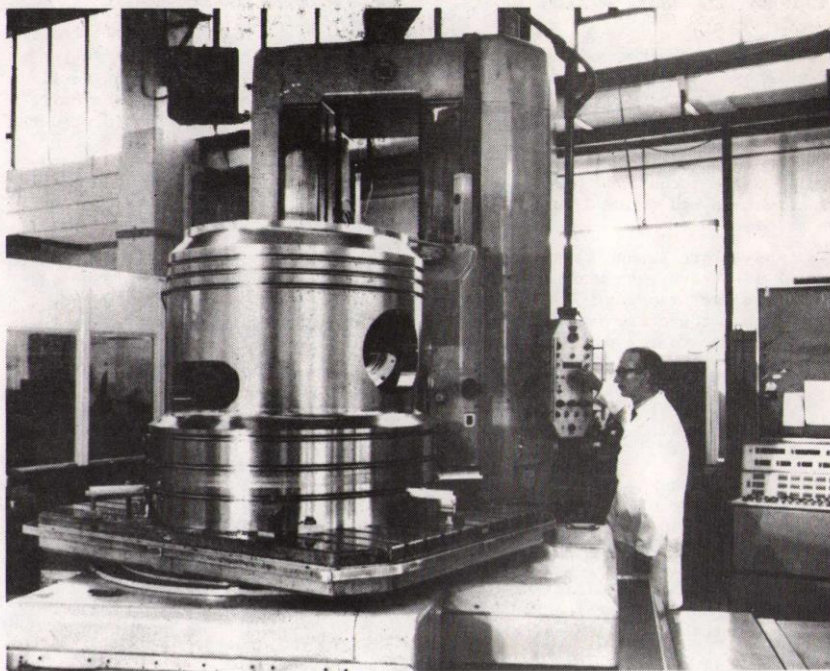
(We thank Dr Ron Newport for this latest news of the RCBC project).

Library Notice

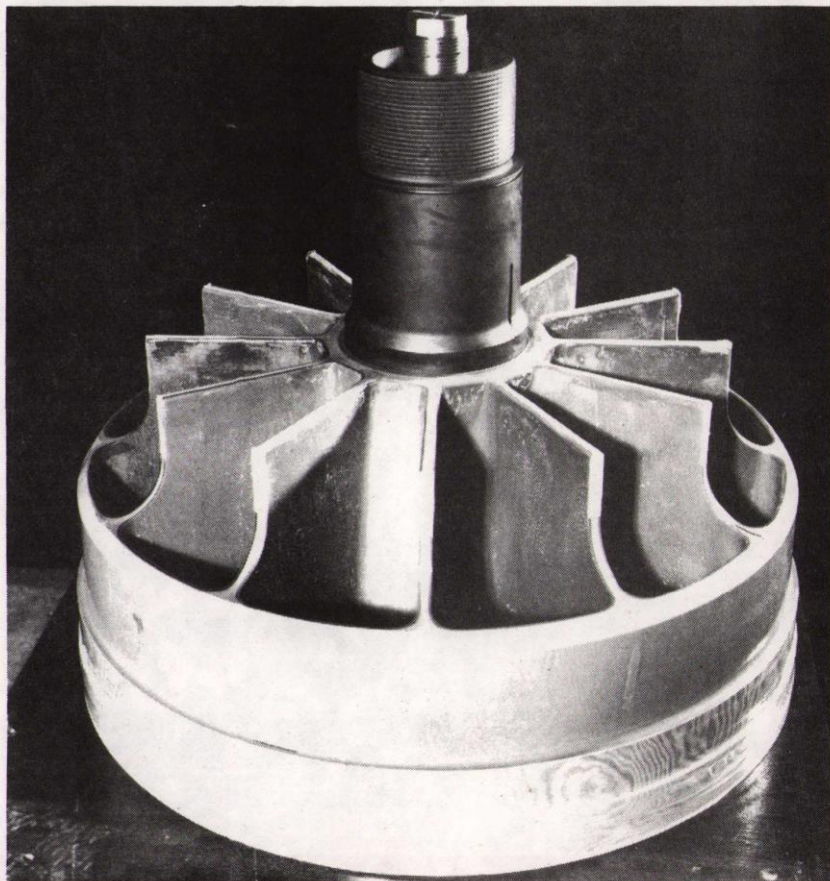
CLOSE ENCOUNTERS OF THE LIBRARY KIND

Would whoever stole a copy of Frank Close's book 'Quarks and Hadrons' from the Library Office please note that the room is now locked in the evenings. Also that unless the copy of the IEEE book on Industrial Applications of Microprocessors stolen from display is returned, all new books will be locked away out of normal working hours.

This is the 3rd Book on micro-processors stolen from display within the last few weeks.



The RCBC chamber body in the final stages of machining. The aperture for the beam entry is seen on the left side of the chamber. (Photo Morfax Ltd).



View of the epoxy/fibre glass piston for the RCBC. This piston has now been carefully bonded to the bellows (not shown) - a joint which must withstand an alternating load of about 40 tonnes during the cycling operation of the chamber.

Power of the Past

At a time when the harnessing of wind and water as economic sources of power is once more being studied seriously, it is fortunate that working windmills and watermills still exist to demonstrate the fairly sophisticated techniques of operation our ancestors had evolved to tackle the problems.

This happy state is due largely to a handful of enthusiasts whose dedication over the past 50 years has ensured that there are now about 200 mills open to the public, in England and Wales.

Watermills

It was the Romans who introduced the first watermills into Britain, and evidence exists in a charter granted by King Ethelbert of Kent in AD 762 to a monastic mill near Dover, that the Saxons were also familiar with the art. By the time of the Domesday Survey more than 5000 mills were recorded.

Windmills

Windmills did not appear in England before the 12th Century, the earliest known reference being to a cornmill in Weedley, Yorks in a document dated AD 1158.

At one point, before the advent of steam, there was estimated to have been 10,000 windmills in Britain, including hundreds of land drainage mills. By the end of the first World War the number was down to 350, and by 1945 only 50 were still working. The number of working mills continued to decline until only two remained. These are working still at Pakenham in Suffolk and North Laverton in Notts. Many of these derelict windmills are now being restored by volunteers.

Local examples

Examples of both water and windmills may be seen locally, some working and some in the process of restoration.

The Wilton Windmill (167/SU276617) in Wiltshire is a fine working example of a Tower mill. It is open on Sunday afternoons. Pitstone Mill, Bucks (159/SP945157) the earliest Post mill extant has the date 1627 carved on one of its timbers, and at Wheatley, Oxon (158/SP589052) an unusual octagonal Tower mill is being lovingly re-built.

The watermill at Charney Bassett, Oxon (158/SU380945) though now without its wheel, is open to the public on Sunday 12 May from 2-5p.m. by kind permission of the Wantage Industrial Archaeology Group, and demonstrates the technique of grain milling through all its stages.

A little further down the Ock, Venn Mill (158/SU430949) an 18th Century example complete with wheel, may be visited on Sundays from 10a.m. - 5p.m.

Watermills abound all over this area in various stages of repair (or disrepair) and a mill hunt can prove an interesting and rewarding diversion.

(All map references are from O.S. sheets).

Learn to SAIL

The Abbey Sailing Club, Abingdon, is to run a Royal Yachting Association approved dinghy sailing course for beginners.

The course will consist of four full days tuition and will include films, theory, safety and practical sailing in Enterprise dinghies. The course fee, which includes temporary membership of the Club, is £10 and the course will be held on the four Saturdays in May.

Application forms and further details may be obtained from Paul Williams R1 Ext 582



Paul Williams
Sails Laser

Rec Soc News

The ANNUAL GENERAL MEETING of the Recreational Society will take place in the LECTURE THEATRE on WEDNESDAY 25 APRIL at 1240 hrs. All members are asked to make every effort to attend.

Folk Club

The next meeting of the Club will be on Friday 4 May. The main guests will be "THERAPY" who are reputed to be one of the best duos on the folk circuit. Both Mike Shannon and Fiona Simpson play guitar, and this coupled with Fiona's singing and Mike's sense of humour should ensure an unforgettable evening's entertainment.

Floor singers will be very welcome, and the meeting will start at 8p.m. prompt, in the Coffee Lounge of the Restaurant.

Tickets are on sale at £1.00 in advance from:

John Ellis	R2	Ext 6689
Steve Cox	R25	Ext 407
George Pullinger		
Ptkbn 4		Ext 6661
Alan Hodges	R12	Ext 6323

With this popular Group, the tickets are expected to be sold quickly so to avoid disappointment please buy your tickets in good time.



Deadline for Insertions

BULLETIN

1000 hrs Tuesday 1 May

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