



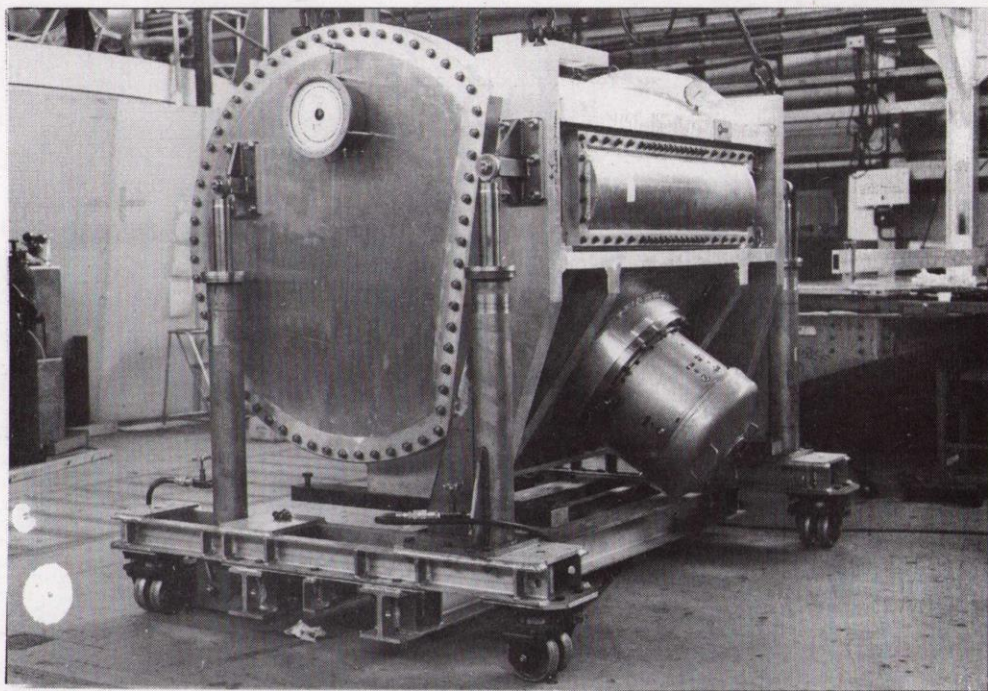
Rutherford
Laboratory

27 August - 10 September 1973

bulletin 29

APPARATUS FOR EXPERIMENT
S120 AT CERN

Photograph - High Pressure
Cerenkov Counter



Experiment S120 at CERN is in an advanced state of preparation with erection on site almost finished. Setting up on the beam has commenced. This is a collaboration experiment between teams from CERN, Stockholm University, Birmingham University, University of Genoa, and the Rutherford Laboratory. The purpose is to study the reactions $\pi^- + p \rightarrow \Sigma^- + K^+$, $K^- + p \rightarrow \pi^- + \Sigma^+$ and other two-body processes at 10 GeV/c.

A large quantity of equipment has been provided by the Rutherford Laboratory Nuclear Physics Apparatus Group for this experiment. Amongst the equipment supplied is:

1. A large high pressure Cerenkov counter working at 8 atmospheres. The body diameter is 1.27 m and the length 1.78 m, it is of welded construction in aluminium. The main technical features are the thin beam entry window measuring 1.2 m long x .25 m high with a low mass spherical reflector inside the counter. This reflector is 1.5 m long x 0.6 m high and was constructed by a cold moulding technique on an accurately produced plaster mould. It is of a honeycomb construction for rigidity. The reflecting face of melinex was aluminised in a manner to give maximum reflectivity from the ultra-violet region. The Cerenkov light reflected from the mirror passes through the largest synthetic quartz window yet made in this country, 0.5 m diameter x 0.12 m thick. Much of the vessel was constructed of 75 mm thick high tensile aluminium alloy plate which led to a lot of problems in welding. The Laboratory successfully evolved its own welding methods. A stand was also provided for this counter with facilities for hydraulically jacking the unit into varying heights and angles to the horizontal.
2. Twenty wire spark chambers were provided, with 1 mm spaced wires, all the wires diagonal varying between 0° and 30° . The largest of the chambers measuring 2 m x 1 m. A set of four wire chambers were designed to go in the 50 cms gap of a bending magnet. These were made with special thin frames to give maximum aperture for beam. This was done by a system of pneumatic pre-stressing of the aluminium frames. All the chambers were fitted with capacity readout giving high multi-track efficiency, involving a total of 80,000 wires each having its own separate electronic circuit and needing a lot of exacting technology as regards electrical connections to spark chambers and the manufacture of the special printed circuit boards on which the 160,000 components were fitted. Most of the soft soldering was done by a specially designed machine.

News continued on page 4

INTERNAL EVENTS

SPECIAL NIMROD LECTURE
Tuesday 28 August
11.30
Lecture Theatre

"The Price of Asymptotic Freedom"

Professor S Coleman/Harvard University

NIMROD LECTURE SERIES
Wednesday 29 August
11.30
Lecture Theatre

Gauge Models of Weak Interactions

Professor S Weinberg/Harvard University

NIMROD LECTURE SERIES

No Nimrod Lecture on Monday 3 September

HEP SEMINAR
Tuesday 4 September
11.00
Conference Room, Building R1

A Model for two Particle Correlation

Dr S Pokorski/CERN

NIMROD SCHEDULE

CYCLE 9 28 8 73 - 16 9 73

MACHINE PHYSICS

HIGH ENERGY PHYSICS

<u>Team</u>	<u>Beam</u>	<u>Experiment</u>	<u>State</u>
UCL/BRUSSELS	K19	Stopped K^- using TST/HBC	Data
RHEL	$\pi 11$	Beam Studies	Tests
BIRMINGHAM/SURREY/RHEL	K17	Stopping Kaons	Setting up
CERN/ORSAY/OXFORD	P81	Hadron-Proton Spin	Setting up
OXFORD	P71	Chamber Tests	
COUNTER GROUP B/ CAMBRIDGE UNIVERSITY	$\pi 12$	$\pi^- p \rightarrow K^0 \Lambda^0$ in the range 1.4 - 2.0 GeV/c	Setting up
IMPERIAL COLLEGE/RHEL	$\pi 8$	Experiments on Narrow Bosons. $X^0(958)$, S^* and Cross Section Measurements	Setting up

SOCIAL NEWS

RECREATIONAL SOCIETY DANCE

The next dance will be held on Friday 14 September, 8 till 1 am. Dancing to 'The Education', Licensed Bar, Buffet Supper.

Tickets 70p, from Mrs V Goodwin - R1, ~~Mrs F. Goodwin~~ ^{D. EVANS} - R34, P Craske - R2, F Cooke - R8.

HORTICULTURAL SOCIETY - FLOWER SHOW

The Flower Show is to be held on 13 & 14 September. Schedules and entry forms are available from any committee member or, S H Dixon - Bldg 150, Ext. 72-2886 or Roy Brabben - R20, Ext 410. Please note that the Show is not restricted to members - anyone can enter. There are classes for flowers, vegetables, fruit, cookery, preserves, handicrafts and home made wines. Let us try to improve on previous years in both quality and quantity.

CHRISTIAN FELLOWSHIP

Friday, 31 August - Derek Smaje of Bldg R18 will be leading a Bible Study on the subject "Christ in the Book of Leviticus (Part 1)". This is in the new series entitled "Christ in the Old Testament". All are welcome to come along at 12.30 in the Conference Room, Building R12.

Friday, 7 September - Ben Kingdon of Bldg R20 will be leading the monthly prayer meeting. All are welcome to attend the meeting which is at 12.30 in the Conference Room, Building R12.

TELEPHONE DIRECTORY ALTERATIONS FROM 27 7 73

ADDITIONS

LES MRS G M	6289	AL	AL ADM
LOBB DR D E	6660, 424	R25 2	AP
COPPERTHWAIT MRS	479	AL 38	AL ADM
WESTMORLAND MRS D W	6394	AL 56	AL ADM
WHITTAKER DR J B	6176	RI 2.33	CA CA
DODD MRS M A	6204	R20 18	ADM FA

AMENDMENTS

BOSHER W H	delete 344	
GOODWIN MRS V E	delete 6154	add 6256, 6298
Sec. to Dr T G Walker)		
& Dr C J S Damere11)		
WILSHAW F N	delete High	add Abingdon 22167
	Wycombe 881840	
DAVIES DR J D	delete 521	add 6158
MARCH DR P V	delete Dr 450 R2.02	add Prof.6265 RI.1.7
RIDDLE DR R A J)	delete R35 rm 3	add R12 rm 5
		add 6348, 6349, 471
SMITH DR P F	delete rm 1.04	add rm 1.05
SNOWDEN M	delete rm 1.01	add rm 1.08
McNAUGHT MISS A E	delete rm 1.03	add rm 1.07
BATTY DR C J	delete 461	add 426
PRESTON MRS A D	delete A D	add D S

The Bubble Chamber Research Group has moved to rooms in RI Link first floor (some have still to move) and the following list gives room numbers and telephone extension alterations

Miss M Hale, Secretary to Group Leader, from room 1.49 to 1.69 Tel ext 248/6236/243/6632

Rooms			Extensions	Rooms			Extensions
From	To			From	To		
Dr G E Kalmus	1.49	1.69	248/6236	Dr W S Chapman)	1.43	1.60	243/6632
(Group Leader)				Dr B H Bracher)			
Dr C M Fisher	1.48	1.70	248/6236 (delete 243)	Mr M W Waters	1.24	1.59	243/6632 (delete 6251)
Dr B Franek	1.52	1.71	248/6236 (delete 6123)	Mrs J M Cheney	1.24	1.59	243/6632/6251
(as from 17 9 73)				Dr D J Crennell)	1.54	1.61	243/6632 (delete 248/6236)
Dr J Barlow	1.52	1.72	248/6236 (delete 6123)	Dr W A Venus)			
(as from 17 9 73)				Dr R L Sekulin)	1.47	1.62	243/6632 (delete 229)
Dr J W G Wignall	-	1.67	248/6236	Dr J A Charlesworth)			
Dr T C Bacon	-	1.67	248/6236	Dr S N Tovey	1.44	1.63	243/6632
Dr G P Gopal	1.46	1.67	248/6236 (delete 6233)	Dr K Paler	1.54	1.63	243/6632
Mrs A E Steer)				Dr J G V Guy	1.44	1.64	243/6632
Mrs A C E Bishop)	1.25	1.58	248/6236/243/6632/6622)	Dr A J Horn)	1.45	1.65	243/6632
Mrs P Coulthard)	(as from 3 9 73)			Dr R T Ross)			

OVERSEAS VISITS

Dr R P Worden, to Bonn, 24 August - 3 September, to attend Sixth International Symposium on Photon Interactions at High Energies.

Professor M Eckhause and Dr D H Worledge, to Munich, 27 August - 1 September, to attend Nuclear Physics Conference.

Dr D R Quarrie, to CERN, 26 August - 4 September, for discussions on ISR Analysis.

Mr D C Salter, to ILL Grenoble, 27 - 31 August for discussions with ILL staff.

The Director, to Bonn, 29 - 30 August to attend meeting of IUPAP Commission on Particles and Fields.

Mr J F MacEwan, to CERN, 31 August - 10 October, to study the current problems and the future proposals for the CERN computer networks.

Dr D P Roy, to Pavia, Italy, 30 August - 4 September, to attend the Fourth International Conference on Multiparticle Hadrodynamics.

Dr J J Thresher, to CERN, 28 August - 2 September, to participate in ISR Proposal 72 and to attend meeting to discuss further SPS experiments.

RUTHERFORD LABORATORY BULLETIN

Published by the Scientific Administration Group

Editor: H F NORRIS

Deadline
for
Insertions

GENERAL & SOCIAL NEWS
Tuesday 1600

INTERNAL & EXTERNAL EVENTS
Wednesday 1200

Room 42 Building R20
Rutherford Laboratory
Chilton Didcot Berks
Abingdon 1900 Ext 484

3. A large air pressure Cerenkov counter with an aperture of 4.2 m wide x 2.2 m high and having a depth along the beam axis of 2.8 m was needed. The Laboratory produced 14 low mass reflectors measuring 0.5 m x 0.6 m for this, again made on an accurate plaster mould, the low mass construction being obtained by cold casting together 6 mm diameter hollow epoxy spheres giving a rigid geodetic structure. Again dimensional accuracy and reflection of ultra-violet light were important features. Fourteen sets of accurately made Winston cones were supplied; these were produced from aluminium spinings coated with a special lacquer and then aluminised.
4. Other instruments were provided: a gas supply control unit for proportional chambers, refractometer for the Cerenkov counters, EHT capacitor charging units etc.

In addition to the above a lot of equipment has been provided by CERN such as beam Cerenkov counters, hodoscopes, on line computer system, proportional readout logic, spark chamber readout logic etc. Professor Peter Wilde's Electronic Group, Rutherford Laboratory, have provided the hard-wired computer for trajectory fitting, the Nimrod Group the M5 magnet, the group from Genoa have provided the large proportional chambers.

Much of the installation work of the NPAG supplied equipment on site at CERN was carried out by the Rutherford Laboratory technicians and craftsmen.

TRAINING CONCESSIONS 1973-74

Prospective students should note the following arrangements for enrolments at local Technical Colleges.

OXFORD POLYTECHNIC:)
Department of Science)
SOUTH BERKS COLLEGE OF FURTHER EDUCATION:)
Department of Technical Studies)

Enrolment on first day of class

NORTH BERKS COLLEGE OF FURTHER EDUCATION:
Department of Engineering & Science

Former students of the College should use the pre-enrolment forms distributed with examination results

OXFORD POLYTECHNIC:
Department of Engineering

Enrolment cards will be available in RHEL Training Section about the end of August and must be completed by Wednesday 12 September.

READING COLLEGE OF TECHNOLOGY:
Departments of Electrical and
Mechanical Engineering

Enrolment cards already available in RHEL Training Section must be completed by Friday 31 August.

Mr G L A Taylor and/or Mr E Richards of Reading College of Technology will visit the Laboratory on the morning of Monday, 3 September to discuss problems with prospective Electrical and Mechanical Engineering students. Appointments should be made by ringing Extension 555/266.

The following students must enrol at the College in person at the times shown in the College prospectus:

Those who wish to attend other Colleges or other Departments of the above Colleges.

Those who wish to attend Oxford and Reading Engineering Departments but do not meet the above deadlines.

Those (other than prospective Reading Engineering students) who wish to discuss problems with College staff.

SHORT COURSES AT READING COLLEGE OF TECHNOLOGY

Information has been received about the following short courses to be held in the Departments of Electrical and Mechanical Engineering at Reading College of Technology:-

Applications of Semi-conductor Devices
Electronics for Mechanical Engineers
Electronic Updating for Technicians
Pulse Code Modulation

Colour Television
Work Study
Work Study Appreciation
Welding Technology

Enquiries to Training Section, Building R20, Extension 555.

FILM BADGE NOTICE

It is Period 9. Colour Strip - GREEN for $\beta\gamma$ films and neutron packs.

Please check that you are wearing the correct dosimeter and that all old ones are returned.

NATIONAL SAVINGS CERTIFICATES - WEEKLY CYCLE ENDING 17 8 73

Certificates can be collected from the Cash Office, R20 from 20 August onwards. New members wishing to join the scheme can obtain enrolment forms from the Cash Office.