

*Getting it to
work*

PHYSICS EQUIPMENT
for HIGH SCHOOLS

DEVELOPED BY

NSW DEPARTMENT OF SCHOOL EDUCATION  IN ASSOCIATION WITH

AUSTRALIAN INSTITUTE OF PHYSICS 

 SCIENCE TEACHERS ASSOCIATION OF NSW

ETF 

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Getting it to Work - Physics Equipment for High Schools was written and developed by *Gay Hawkins* with the support of *Kerry Marston*; Senior Curriculum Officer (Science K-12), Curriculum Directorate of the NSW Department of School Education.

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Anna Binnie	- Cloud Chamber
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Pat Keam	- Spectroscope
Phil Wicks	- Cathode Ray Oscilloscope
Kevin Mahony	- Millikan's Oil Drop
Parry Jones	- Spectrometer
George Kelen	- Collisions in Two Dimensions and - Current Balance

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ERRATUM

**"Curricula Directorate" in the foreword,
should read "Curriculum Directorate"**

FOREWORD

The NSW Branch of the Australian Institute of Physics (AIP) has maintained close links with secondary and tertiary teaching of physics. The AIP has been involved in numerous projects to meet in-service training needs of teachers and to encourage secondary school students. At an in-service course in 1992 attended by the then Chairman, Professor Bob Clarke, it was suggested that one of the major deficiencies for non-physics specialist teachers was in using equipment for which there were no reasonable manuals or technical data. Out of this suggestion was borne a proposal put to the Education and Training Foundation (ETF) to support the development of an equipment manual for secondary school teachers. A joint application to ETF was successful and, in 1993, a steering committee consisting of representatives of the NSW Department of School Education, the NSW Branch of the AIP and the Science Teachers' Association of NSW set about preparing the manual.

The project benefited enormously from the expertise of Kerry Marston (Curricula Directorate), and Norman McCulla (Training and Development Directorate) of the NSW Department of School Education and of York McCullum of the Science Teachers' Association (NSW). The committee initially identified equipment that was considered to be troublesome and then, with advice from specialist secondary teachers, reduced the list to a manageable number. The project then required a careful development of fact sheets which addressed the major issues associated with operating the equipment in a school environment. The normal problems associated with operating and maintaining the equipment were also addressed, as well as suggestions about demonstrations of particular value.

We hope that you find this manual useful and welcome any opportunity to assist in the use or development of further resource materials.

JOHN O'CONNOR
Chairman

DON NEELY
Secretary

NSW Branch of the Australian Institute of Physics

CONTENTS

	<i>page</i>
Introduction	5
Equipment	
Cathode Ray Oscilloscope	6
Cloud Chamber	10
Collisions in 2 Dimensions Kit	12
Coulomb's Law	15
Current Balance	18
Current Balance Kit	21
Energy Interconversion Kit	24
Gas Discharge Tubes	27
Laser	31
Linear Air Track	34
Mass of the Electron Kit..	36
Microwave Kit	38
Millikan's Oil Drop Equipment..	41
Spectrometer	43
Spectroscope	46
Van de Graaff Generator	49
Video Camera	52
Index by Physics Topic	54
Index by Learning Experience	56

INTRODUCTION

The use of equipment is an essential part of successful physics teaching. Many pieces of equipment are very specialised. To the unwary or inexperienced teacher of physics they may even appear mysterious. Even the instruction manuals, if they are still available may offer very little help. Much of this equipment can remain unused in school cupboards or storerooms.

The manual has been developed to assist teachers in the use of some of this equipment. It has been designed to offer a step-by-step practical guide in how to set up the equipment and get it to work. Practical hints are given on what to look for and check to ensure success and safety. There are a number of suggested learning experiences using the equipment for students in the senior physics classroom.

In selecting the pieces of equipment to be addressed in the manual consideration was given to the amount of difficulty teachers had indicated they had in using it, as well as its importance to the teaching of physics. The method for setting up and using each piece of equipment has been well researched and trialled by a number of teachers not experienced in using the equipment.

The equipment has been arranged alphabetically for ease of access. In the back of the manual you will find two indexes, one by physics topic and the other by individual learning experience. It is hoped that these will make the manual even more useful and easy to link into the senior physics syllabus and school programs.