

JULY 1965

SECRETARY'S REPORT 1964 - 1965

During the year membership of the Group has increased and attendance at extraordinary meetings has been very good. Unfortunately attendance at many Committee Meetings was poor leaving a burden of work on the few regular members at these meetings.

The Group Magazine under the editorship of Mr. F. Davis has been expanded, improved and mid way through the year changed in format and name to 'U.R.G. Bulletin'. Photographs were included in three issues but had to be discontinued due to the high cost of printing the large number of photographs needed. Several members have contributed articles to the Bulletin but the response has not been as great as we would wish. Articles have been received from the South Australian Museum's Underwater Research Group and at their request 30 copies of the Bulletin are being sent to them every month at a nominal charge.

A great deal of work has been done through the year in association with the Australian Museum and our relationship with this institution is at a high level. Collection of marine animals have been made at Burraneer Bay, Fairlight and Fort Denison. During the diving survey of Fort Denison several artifacts of historical value were found and presented to the Fort's curator. The Museum has indicated that they would be pleased to have our co-operation at a future intensive collection in the waters surrounding the Fort. starfish have been collected for shipment to the South Australian U.R.G. and several specimens of a, as yet, unnamed species of seastar have been forwarded to Miss E. Pope of the Australian Museum. coral specimens have been collected for Miss I. Bennett of Sydney University and on request a collection of local shells has been sent to the American Museum of Natural History in New York.

A Nikonos underwater camera and flash unit has been purchased and the custodians Mr. F. Davis and Mr. C. Lawler have been working to build up a library of marine life slides for the Group. at the same time they are testing various flash bulbs for the most satisfactory exposures in different conditions.

A concrete fish house has been constructed and bolted in position in 20' of water at Glaisher point. This is the first element of a proposed artificial reef to be constructed in this area.

A number of elementary SCUBA schools have been conducted through the year by Mr. D. Landor. Mr Landor is also Secretary of the Shark Research Society. Ten pounds was donated by the U.R.G. to this Society to help finance its first report which was published late in 1964.

The President, Mr H. Couch is also active on the committee of the Resuscitation Research council and the Council of Underwater Activities. This latter group ceased to exist in the latter half of 1964 due to lack of support by many of the member associations.

Trawler dives were discontinued late in 1964 due to several factors: lack of support by divers, resulting in high cost of subsidy to U.R.G. and difficulty in securing a suitable trawler.

Lecturers such as Miss I. Bennett of Sydney University, Dr. J. Thomson of Manly Oceanarium and Dr. J. Yaldwyn of the Australian Museum have been present at general meetings. Movie films at each meeting have been screened by the President, Mr H. Couch, on his own 16mm movie projector thus saving the cost and bother of hiring a projector from an outside source. The President also arranged a demonstration of mouth to mouth resuscitation and closed chest heart massage technique through the Resuscitation Council.

The December meeting took the form of a Christmas party; this was well attended and it is hoped to be able to make this a yearly event.

In many respects this has been a most eventful year and it is to be hoped that the Group continues in the coming year with the work in hand and the several proposals put forward in the latter half of the year.

C.J. Lawler - Hon. Secretary

Boilers and pressure vessels are used in many industries; some are more accessible than others, yet all have to be certified.

In this article we are concerned with the larger vessels which have to be entered by the Inspector to ascertain whether there has been any plate wastage or deterioration.

In the case of large air receivers, there is always the danger of oil vapour being present, polluting the air and proving a hazard for the inspector until the vessel has been properly ventilated.

CO₂ Receivers cannot be internally inspected until the odourless and colourless gas has been expelled and the vessel well ventilated. In this type of vessel the old practice of using a candle or slush lamp would prove a life saver. Of course, with other gases the naked flame may solve all your problems forever.

Take care with all closed vessels, whether they are pressure vessels or not as a closed vessel can absorb a large part of the oxygen from the enclosed air in the process of rusting. To illustrate this the following extract is taken from a letter received from the Assistant Chief Engineer of a large English Insurance Co:-

'One of our inspecting engineers carried out a thorough examination of a large waste heat boiler at a Gas works in May, 1960. The boiler was then boxed up and left without any water in it until March, 1961. It was then decided to put the boiler into service but before doing so the firm asked to put the boiler into service but before doing so the firm asked our Inspector to make a further internal examination to enable an up-to-date report to be issued to cover the next fourteen months. When he arrived on site, the top cover had been removed and he entered the boiler; a few minutes afterwards one of the attendants called out to him and received no reply. He was found in a collapsed state at the front end of the boiler down between the two banks of tubes. The fire brigade was called and two small mudhole covers were removed to permit thorough ventilation, but it was half an hour before the Inspector could be brought out of the boiler. Artificial respiration was tried but without result.'

Death was caused by asphyxiation due to lack of oxygen in the boiler and while it is easy to be wise after the event it is a mistake which anyone might have made.

MUSEUM ECOLOGY STUDY

On Sunday, June 16th, Group divers took part in a collection of Marine Fauna in the Shiprock area. This outing which was arranged by Don Wilson who, as well as bringing the necessary container, also provided transport of the collection back to the Australian Museum, saw a dozen Group members in the water.

An impressive variety of species was collected but most impressive to me was the manner in which the collecting was effected. This was done in a most intelligent manner with the principles of conservation observed at all times. Unavoidably as always with a large group, some specimens were duplicated but mostly a minimum number of useable specimens was removed from the water.

The Museum, through Miss Pope, have expressed their gratitude and also special interest in some particular specimens of which they have requested further samples.

It is hoped that a full report wil follow the lengthy task of listing the many species at the Museum.

F. R. Davis

AMATEURS IN OCEANOGRAPHY - by Jon Wood

The pioneer work of amateur explorers, which was the very backbone of world discovery, has largely been superseded by professional teams using costly modern techniques. A single tool, the aerial camera, has removed much of the sweat - and fun - of exploration. This trend away from the individual has, however, been strikingly reversed in the marine sciences. The invention of cheap diving apparatus, notably the aqualung, has made a new

territory accessible to the amateur explorer. He can equip himself for only £100 and, at little extra expense, discover a new world existing between the high-water mark and the 30-fathom contour. With negligible risks and always within a few minutes of warm food and comfortable quarters, the trained diver can discover new species of fish, unique rock formations, and the remains of ancient civilizations uncontaminated by successive centuries. Aerial photographs cannot penetrate these shallow waters and underwater craft are unable to enter the confined spaces available to the aqualung diver. The difficulty of operating a large research vessel on this shallow coastal strip has retarded its study by professional oceanographers. The opportunities for divers are unlimited.

The simplicity of the aqualung makes diving available to any active person after a few hours' training and he is able immediately to sample the pleasures filmed by Cousteau and Hans Hass in the early days. The more serious diver, like the good explorer, requires more physical and mental control. Divers, according to Surgeon-Captain Stanley Miles, whose experience of medical research in the Royal Navy has enabled him to study them, are little more than Freudian misfits. He compares the dark enveloping waters of the sea with conditions in the womb and interprets the diver's descent into the sea as a rejection of the world and a desire to return to the tranquility prevailing before birth. Whether this is any nearer the truth for divers provides a marvellous study for psychologists. Their measurements of the diver's mental state, and his ability to perform simple tasks on the sea-bed may have direct bearing on the formulation of underwater research projects.

These basic studies of the diver's performance will eventually improve his usefulness in undersea exploration, but he is already an invaluable tool in the hands of professional oceanographers and marine biologists. Cousteau and Hass have shown the world how they moulded divers into efficient scientific teams operating from large research ships. However, the major part of diving research has been carried out by individual scientists working without these expensive facilities.

The number of professional marine scientists is scarcely sufficient to skim some of the cream off the great volume of research demanding their attention. There is a sense of urgency in this work on the

continental Shelf. It is here that the world has its largest untapped source of food, one that may become vital in the next half century as the exploding population demands more and more to eat. The technique of fish hunting as practised at present will fail to satisfy the increasing demand and must be replaced by scientific methods based on precise knowledge of the behaviour of fish and their response to changes in environment.

The amateur, in his diving club, can contribute to this search for basic knowledge of our coastal waters and, in doing so, he will gain far more satisfaction from his sport. For some, of course, the twice daily Freudian dip is sufficient in itself, but for the majority of us the excitement of diving is maintained by using it to some purpose. Even the achievements of spear-fishing are more fully enjoyed when, like the African big game hunter, the diver uses a cine camera, to record rather than destroy.

A large part of the time will be spent collecting biological specimens. The technique varies with the size and habits of each specimen. Those that live permanently attached to the cliff face or rocky sea-bed are scraped off, along with their neighbours, into a glass bottle or cloth bag. The collection is examined under a magnifying glass or microscope and sorted into the hundreds of species that live in close proximity under such conditions. The work of sorting is a laborious one, taking many times longer than the few minutes required for each scrape, so it is vital to maintain great control over the original collection. A series of scrapes is collected from different depths and the temperature and aspect of each are carefully recorded. Ideally, several scrapes are made at each depth, in different orientations and variously exposed to passing currents and light. This sophistication must be acquired by the amateur before he can become more than a labourer in this exciting field.

At present the capture of larger fish is more primitive, the physical act of capture increasing with their size and mobility. Ideally a fish should be watched for many hours before capture, so that environment and habits may be

understood. May this may be possible with, for instance, a groper, which limits its movements to a few yards around a hole in the cliff or among boulders, it is obviously out of the question with free-ranging fish. A diver can spend only a few minutes underwater; insufficient time for a full fish study, but just enough to capture one.

Small specimens are caught in polythene bags after a brief and, sometimes undignified chase. Happily, much of the diver's work in marine biology does not require the capture of specimens. Repeated observations of a single fish in its natural surroundings are frequently more profitable.

Such observations and experiments are well within the capabilities of amateur divers, provided they are prepared to discuss each project with experts. An invaluable tool in this work is the underwater camera, which requires considerable skill and experience in use. Few professional scientists find time to acquire this skill, but many amateurs obtain good underwater photographs and film. Recording fish behaviour in this way can provide irrefutable proof of some unexpected observation. Professional scepticism often melts in the face of a really good cine film.

If the site is an ancient wreck, the various artifacts visible through the sand must be plotted with the minimum of disturbance. Except on very rare occasions, amateur divers are not easily permitted to carry out any excavation. It is a task which cannot be learnt, and must be left for professional archaeologists. Many sites, however, are large physical features, perhaps a reef or cave, where the diver must work in three dimensions, using his wrist depth gauge to measure depths and correcting them for tidal variations by noting the precise time of each reading. The combination of buoys, depth gauge, rope and watch, and a knowledge of three-dimensional trigonometry permit the diver to survey complicated underwater features with high accuracy.

These projects are but examples of the type of work that divers can do to help professional research. There is so much to be done between the high tide and 30 fathoms contour that marine scientists will achieve only a small fraction without the assistance of amateur divers. Many of the tasks are little more than underwater labouring, involving the collection of rocks and sand from the sea-bed, or samples of fish populations, but the sense of being involved in a programme that has been

planned by an expert lifts these simple diving jobs far beyond the actual task of hitting rock with hammer. The pleasure to be gained from carrying out a task efficiently and rapidly in difficult conditions increases immeasurably when it is part of a general scheme that the diver sees growing as his work progresses. This involvement in professional research adds a new dimension to the pleasures of aqualung diving.

NEWS FROM _____

SOUTH AUSTRALIA _____

U.R.G. _____

SALVAGE ON THE CLAN RANALD - S.A. Shepherd

On Anzac weekend six members of the Group visited the Clan Ranald off Troubridge Hill, Yorke Peninsula in the next step towards salvaging the vessel's valuable bronze propellers.

The surface conditions were excellent and two boats motored the seven miles along an inhospitable coast to the wreck almost without incident.

After preliminary measurements were taken of the propeller shaft, charges were prepared and placed in plastic tubing on deck and then fixed in position around the shaft by divers. Doug Steen filmed the event.

The fuse was lit and an undignified scramble followed to evacuate the immediate area. With some alarm we then observed a curious fisherman approach in his launch to investigate the unusual spectacle of a smoking buoy. Possibly with a sense of imminent disaster, he took off as fast as he could and was not seen again.

The ensuing explosion caused a considerable shock wave and a sharp crack which reverberated around the cliffs. Very soon

the water above the propeller boiled with pulverised seaweed and a number of dead fish floated to the surface. Seventy feet below the effect was devastating. Although the stirred up sediment made it difficult to determine exactly what had happened, it was apparent that the propeller shaft was severed and two of the propeller blades were broken off and were later found lying near the rudder. Further away the whole of the stern section of the wreck was completely denuded of algae and encrusting growth leaving the bare metal burnished and polished. Here and there rust oozed out of the sprung plates.

Surprisingly few fish were killed - probably no more than three dozen in all and these were all within thirty or forty feet of the explosion. In the mid-sections of the wreck some hundred feet away the fish were swimming around in large numbers quite unperturbed by their 'shocking' experience although it was apparent that the explosion had some effect even here, as the exposed edges of the wreck were cleaned and scoured of all growth.

Unfortunately the account does not finish here. It must be reluctantly recorded that the subsequent examination of the propeller boss where the blades had been blown off indicated that it was made of cast iron deceptively covered with a thin coating of bronze and hence of very little value.

NOTE: for the interest of readers the 'Clan Ranald' was a 3,500 ton steamer which sank in 1909 with a cargo of wheat. The Group purchased the wreck in 1963 having in mind the salvage of its 'bronze' propellers each weighing 7 ton and believed to be worth £3,500. Profits were to be applied to marine research.

ABALONE RESEARCH PROJECT ON WEST ISLAND - S. A. Shepherd

Several weeks ago Helge Bergstrom and the writer stayed on the Island over a weekend and tagged and measured more abalone shell bringing the total tagged to about 250. The measurement of some tagged nine months ago has shown an average growth increase of four to five millimetres. This project will be continued for some two or three years.

W.E.A. FIELD TRIP

A field trip of Marine Zoology students from a W>E>A> class conducted by Miss Pope of the Australian Museum, was held at Fairlight on July 4th.

Eight U.R.G. members attended these classes, a series of 10 lectures plus two planned field trips. The format of this first trip was identification and explanation by Miss Pope of samples collected by diving members of the class.

The current widespread interest in matters marine is amply demonstrated when over 70 members of the class spent up to 6 hours on a beach in mid-winter.

PHYSICS OF DIVING Part 3 - W. Tyler

In order to understand the behaviour of gases under variations of pressure and temperature, we must consider their molecular structure. Any gas is a collection of infinitesimal particles called molecules, which are in constant motion; bumping into one another or bounding off the walls of the containing vessel. If temperature is reduced, this motion becomes slower and fewer collisions will occur. Finally when a certain degree of cold is reached, they become so sluggish as to tend to adhere to one another, to liquefy. Still further down the scale they freeze together into a solid. If absolute zero (-459.6 °F) could be reached, all motion would have ceased entirely.

Think of a swarm of bumble bees flying around in a box and bumping against the walls at random. If we shake or heat the box, the bees will fly faster and strike its walls more often. Similarly, if we chill it, they will become sluggish and have fewer collisions. Now each time one bumps into the side it exerts a momentary push and if such collisions are frequent enough they can be added up to a continuous force. This is exactly the case with molecules in a gas. The tiny impact of one collision is multiplied by billions per second on each square inch of surface into a steady and measurable pressure.

Furthermore, if this same gas is squeezed into half of its original space, twice as many collisions must occur in a given length of time and the observed pressure will then have been doubled again, if we increase the absolute temperature, the speed of each molecule will be correspondingly accelerated so that both frequency and force of impacts will increase with proportional rise of net pressure. Therefore, we see that pressure must increase with increasing temperature, and also with decreasing volume, as expressed in our formula $\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$

In any mixture of gases each of the several gases contained in the mixture exerts its share of the total pressure being exerted. This law (Dalton's) states that 'the total pressure exerted by a mixture of gases may be considered to be the sum of the pressure that would be exerted by each of the gases if it alone were present and occupied the total volume. A mixture of gases may be considered to be either a combination of the partial volumes of the individual gases, each partial volume being taken at the total pressure or as a combination of gases, each one of which occupies the entire volume at its own partial pressure. The latter consideration, however, is more definitely applicable to diving.

We can assume that air at (atmospheric) 14.7lb p.s.i. is 20% oxygen and 80% nitrogen by volume. The oxygen exerts 20% of the total pressure or 2.94 lb p.s.i., and the nitrogen exerts 80% of the total pressure, or 11.76 lb p.s.i.. If we increase the absolute pressure exerted by the air to 73.5 lb p.s.i. or 5 atmospheres, which is equivalent to the absolute pressure maintained by SCUBA at 132 feet underwater, the oxygen still exerts 20% of the total absolute pressure and the nitrogen 80% of this total absolute pressure, therefore, the partial pressure exerted by the oxygen is now 14.7 lb p.s.i. absolute, or one atmosphere of pressure, and the partial pressure exerted by the nitrogen is now 58.8 lb pressure p.s.i. absolute. If we increase the total pressure (absolute) exerted by the air to 220.5 p.s.i. or 15 atmospheres of pressure which is equivalent to the absolute pressure maintained by SCUBA at 462 feet underwater, the partial pressure exerted by the oxygen still is 20% of the total pressure exerted. This oxygen partial pressure now stands at 44.1 lb p.s.i. absolute, or three atmospheres, and the partial pressure exerted by the nitrogen is 176.4 lb pressure absolute. Oxygen partial pressure of 2.5 atmospheres and over are extremely hazardous to divers as it causes oxygen poisoning. It is important to notice

that the almost negligibly small partial pressure of one gas in a mixture at atmospheric pressure becomes increasingly significant as the pressure of the mixture rises.

Pure water is a colourless, tasteless, transparent liquid consisting of two parts hydrogen and one part oxygen. The taste and colour frequently found in water is due to dissolved substances. A major distinguishing characteristic of liquid as compared to gases is the incompressibility. Sea water is an excellent conduction of sound and electricity, and supports electrolytic action when dissimilar metals are submerged in it. For practical purposes the weight of fresh water is considered to be 62.4 lb per cubic foot, and the weight of sea water is considered to be about 64 lb per cubic foot. Since water is practically incompressible, the pressure which it exerts is proportional to its depth. For example, if a tank 33 feet deep is filled with sea water, the pressure which the water exerts on the bottom will be 14.7 lb p.s.i. or one atmosphere of pressure. This is the pressure exerted by the water alone; in addition, the atmosphere above the water is exerting 14.7 lb pressure p.s.i. also. The absolute pressure exerted on a body 33 feet deep in sea water is 29.4 lb p.s.i. Every foot in depth of sea water produces a pressure of .445 lb p.s.i., the absolute pressure exerted on a submerged body being the pressure at that depth plus atmospheric pressure.

When water is heated small bubbles are seen rising to the surface. These bubbles are air which was absorbed by the water at low temperatures, its liberation illustrating the fact that heating a liquid decreases its capacity for holding gases in solution, of special importance to the diver, though is the effect of pressure on gas absorption: Henry's law states that the weight of a slightly soluble gas that dissolves in a definite weight of a liquid at a given temperature is very nearly directly proportional to the partial pressure of that gas. That is, at two atmospheres of pressure, almost twice as much gas can be dissolved in a liquid; at three atmospheres almost three times as much and so on. It will be easily understood then, that decreasing by one half the partial pressure of a gas absorbed in a liquid will liberate one half of that gas from the solution.

For example, carbon dioxide is absorbed in the liquid of a 'soft' drink under several atmospheres of pressure, it is liberated rapidly in the form of bubbles when the pressure is decreased by removing the cap from the bottle. The absorption by blood and body tissues of nitrogen under considerable pressure gives rise to many problems in its elimination at the completion of a dive.

Talking Point: Watch your Repetitive Dive Tables in diving you pay AFTER you come out.

Good Diving Area: Inside North Head at the Old Man's Hat, clean water, depth 70' - 25'. Prolific mobile and static marine life. Recently visited by U.R.G. members J. Jansons, B. Connolly, W. Tyler.

MARINE BIOLOGY - PART 3

Elysse Craddock

The Plant Kingdom

Plants differ from animals in being able to produce organic matter from inorganic substances via a complex process called photosynthesis. This reaction takes place in the chloroplasts of plant cells. Chloroplasts are structures containing a green pigment called chlorophyll, which is responsible for the green colour of plants. Light energy is fundamental to this process, in which carbon dioxide from the air and water from the soil are chemically combined to produce high-energy organic compounds. The initial products are carbohydrates (sugars and starch), some of which are then converted in the plant into proteins and fats.

Animals cannot build up their own proteins from the inorganic raw materials carbon dioxide and water, but require ready made proteins, obtained by eating plants or other animals, which have in turn acquired their proteins by eating plants. Because plants can manufacture their own proteins, they do not have to be able to move and so are generally attached, in contrast to animals which must seek out their food so are usually mobile. Thus plants are the primary producers and storers of energy, and form the base of all food chains. A typical food chain in the sea is as follows:-

Microscopic algae » crustacean larvae » small fish » large fish » shark
(phytoplankton) (zooplankton) e.g pilchard e.g. kingfish

Most marine plants belong to a large group of lower plants called Algae. This is an extremely diverse group, ranging in form from microscopic single cells to large seaweeds, often many feet in length, such as the kelps; in the sea they occupy two main regions, the surface mass of water and the littoral zone or shoreline. The algae of the open ocean are mainly microscopic floating types, forming phytoplankton, whereas in the littoral zone the dominant types are macroscopic and attached to rocks, eg. kelps and red algae, although microscopic types are very plentiful in this zone too. Many of these are not free living, but are associated with animals. One important instance is the association of algae with the reef-building corals. The algae provide oxygen for the living corals, oxygen being a by-product of photosynthesis, while many of the calcareous algae help cement the coral together and form a considerable bulk of the reef.

Classification: The classification of plants is similar to that of animals, the Plant Kingdom being divided into Divisions, corresponding to animal phyla. (The names of divisions always end in -phyta,) Each division is further subdivided into classes, orders, families, genera and species, as in the classification of animals. The algae are separated into a number of divisions or phyla on the basis of physiological characters, such as the pigment present and the type of food reserves, morphological characters, including the structure of the motile spores, and life histories.

There are seven main divisions:-

Chlorophyta - green algae eg. Ulve - sea lettuce

Euglenophyta - mostly single celled, with flagellae

Phyrrhophyta - eg. dinoflagellates

Chrysophyta - eg. diatoms

Phaeophyta - brown algae eg. kelp

Cyanophyta - blue-green algae

Rhodophyta - red algae

The most commonly observed algae are the macroscopic Chlorophyta Phaeophyta and Rhodophyta. However, the Chlorophyta contains many microscopic forms as well.

With the Bulletin is a financial statement for the financial year ended June 30th 1965; it reads as follows;

THE UNDERWATER RESEARCH GROUP OF NEW SOUTH WALES
INCOME AND EXPENDITURE ACCOUNT FOR YEAR ENDED 30th JUNE 1965

Hire of Hall	33. 5. 0	Membership Fees	95. 2. 0
Postage, Stationery, Car transfers	29.10.10	Door Receipts	14. 12. 0
Publicity	13. 19. 6	Diving Schools	29. 11. 0
Subscriptions paid	8. 3. 0	Interest Received	27. 0. 8
Social and Sports Activities	12. 10. 0	Net profit on sale of items purchased for re-sale	12. 11
Bulletin	24. 15. 8		
Camera Expenses	17. 4. 4		
Depreciation	27. 4. 0		
Excess of Income over Expenditure transf. to Accumulated Funds	6. 3		
	<u>£166.18.7</u>		<u>£166.18.7</u>

BALANCE SHEET AS AT 30th JUNE 1965

ACCUMULATED FUNDS

Balance at 30th June 1964	796.16.4	Sundry Equipment	193.4.0
Add excess of income over expenditure for year ended 30th June, 1965	6. 3	Nikonos Camera & Flash Unit	<u>86.8.0</u>
			279.12.0
		Less Provision for depreciation	<u>27. 4.0</u>
			252. 8. 0
		Com. Bank of Aust., Manly	115. 9.11
		Cash in hand	8.12. 5
		Stock at cost	<u>27. 7. 1</u>
			403.17.5
		<u>INVESTMENTS</u>	
		N.S.W. Coop. Bldg. & Invest. Society	<u>393. 5.2</u>
	<u>£797. 2. 7</u>		<u>£797. 2. 7</u>

I have examined the above Balance Sheet, dated 30th June 1965, with the books and vouchers of the Underwater Research Group of New South Wales, and am of the opinion that the same is properly drawn up according to the best of my information and the explanations given to me and as shown by the books of the Club. Stock has been valued at cost and in my opinion the Minute Book, Register of Members and other records which the company is required to keep by the New South Wales Companies Act, 1961, or by its Articles, have been properly kept.

Jefferson L. Tarilton (A.A.S.A.) Public Accountant, Auditor.
Registered under the Public Accountants Act 1945, as amended.

