

# DIVING INCIDENTS

## D. Shaw – NDC Incident Adviser

“While I was preparing this presentation, I was reading through an article about the interpretation of risk statistics and adventure sports and came across the following quotation:- ‘In Malaysia quite a lot of people die every year from snake bite, but what is not appreciated is that more people die there from being hit on the head by falling coconuts’ – a fact worth remembering if you’re heading that way. This illustrates the fact that we are often alerted by totals rather than risk rates when looking at incident figures and that perspective is all important when looking at figures. In other words, all might not be as black as it first appears.

While we are talking about totals it is gratifying to report an overall fall in the number of incidents to 165 from some 213 last year. Before anyone jumps to the conclusion that diving practices have been safer this year, you must appreciate that our underwhelming summer meant that there was not as much diving taking place, which would account for a reduction in the number of incidents. It is also true that there has been a certain amount of editing and non-inclusion of what are considered minor incidents.

Not included, for example, is the report of the diver suffering a bruised chest after being violently sick over the gunwhale of a charter boat, or the diver who cut a finger on the diving ladder of the boat. This is not to say that we do not wish you to continue to send in such reports. Please let us decide if they are really diving incidents.

All incidents are now filed on a computer data base which allows ease of access to information and has meant the NDC,

this year, has had a running total of incidents and so can see ongoing trends. The annual Incidents Report which you have in your folder is also set out differently in an attempt to make analysis easier. You will see that incidents of a similar type are grouped together and that much of the statistical information is represented graphically.

Fig 1 1985 INCIDENTS ANALYSIS

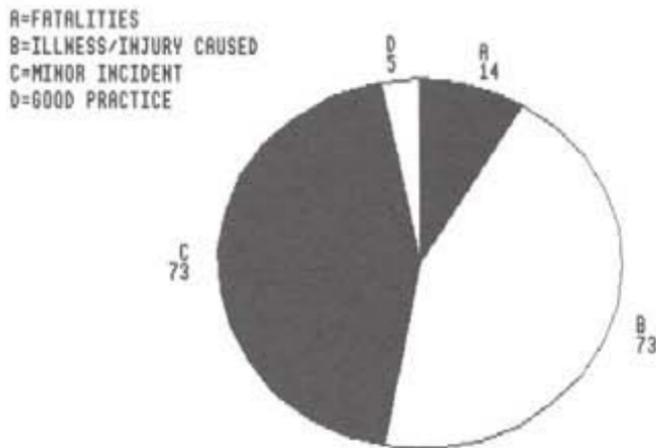


Figure 1 shows how our incidents are classified. All fatalities are ‘A’, incidents with illness or injury caused are ‘B’, minor incidents or incidents where no injury was caused are ‘C’ and

good practice incidents are 'D'. Of the 14 fatalities shown, 8 are BSAC members and as you can see we have an equal number of 'B' and 'C' categories.

All completed incident forms are now sent to HQ who then send out copies to me. In addition, all Club Officers receive details of fatalities so that appropriate letters can be sent to the families of the deceased and their Branches. It also gets over problems experienced in the past when inquests have been held without adequate technical and legal representation for the Club, because we were not fully informed.

As such there is no separate 'Diving Incidents Panel'. The NDC receives regular reports and is in effect the incidents panel in addition to its other responsibilities.

Fig 2 INCIDENTS BREAKDOWN

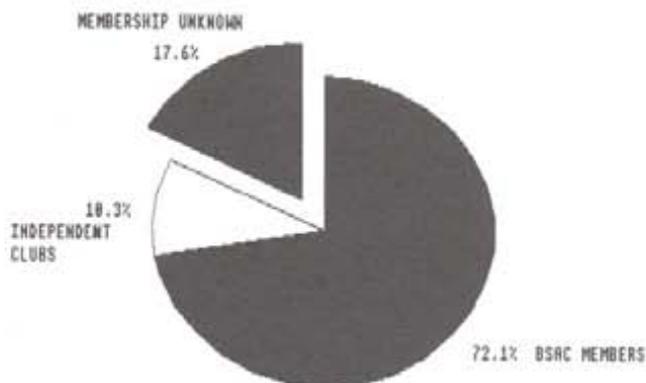


Figure 2 shows the total number of incidents broken down into membership status. As you might expect, nearly three quarters of the reports are from BSAC members but with quite a high number in the 'Membership Unknown' category. Information has been pursued quite vigorously, this year, with the help of Robin Eccles at HQ, yet we are still not getting a full picture of the size of our incidents problem, especially with regard to decompression sickness. We are indebted to HM Coastguard Service as we receive copies of all Coastguard Incident Report Forms when divers have alerted the rescue services. Often this is the only information received! Diving Officers of Branches whose members have been involved in a rescue services incident and have not reported it, perhaps might remind them 'You can't hide that easily'.

Fig 3 DIVERS' USE OF EMERGENCY SERVICES

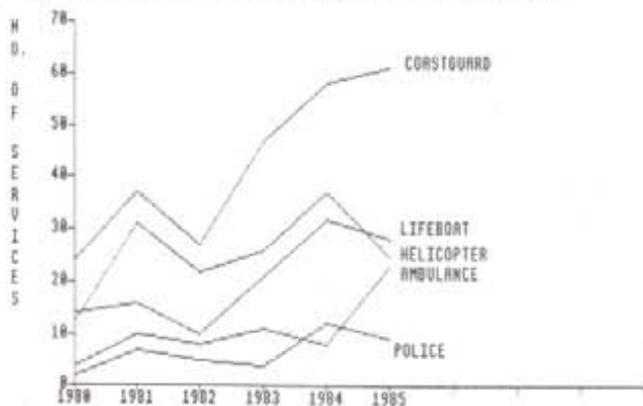


Figure 3, shows divers' use of emergency services over the last five years. The use of the Coastguard continues to rise with 61 call outs this year yet there has been a downward trend with lifeboats and helicopters. In spite of this, there were 25 SAR helicopters needed this year. I wonder whether the increased use of Marine VHF radio in small boats has meant that divers are more willing to call the help of the Coastguard than a few years ago, when these were generally not available and an incident had to be really serious before help was sought.

The records show that 128 of the 165 incidents occurred in British seawater, some 77% of the total. Not surprisingly, British freshwater was the next most popular place to have an incident, with 25. I ran a quick analysis of the geographical location of incidents around the British Isles and found that 37% of all incidents occurred in the South West, the next highest total being 11.5% for the West coast of Scotland. Stoney Cove had the top score for a single location, with 8% of all incidents.

Fig 4 1985 MONTHLY BREAKDOWN OF ALL INCIDENTS

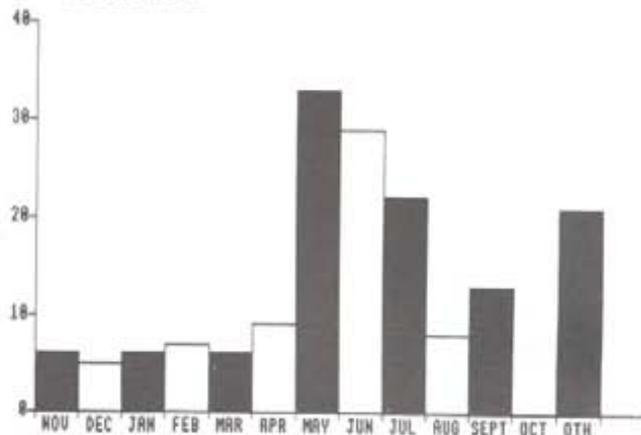


Figure 4 shows the expected upsurge in incidents with the main UK diving season in May but shows a surprising decline in August and September. Perhaps by this time divers had become so fed up of the atrocious weather that they spent their spare time in more productive activities, rather than go diving.

Fig 5 QUALIFICATION OF DIVERS (93 REPORTS)

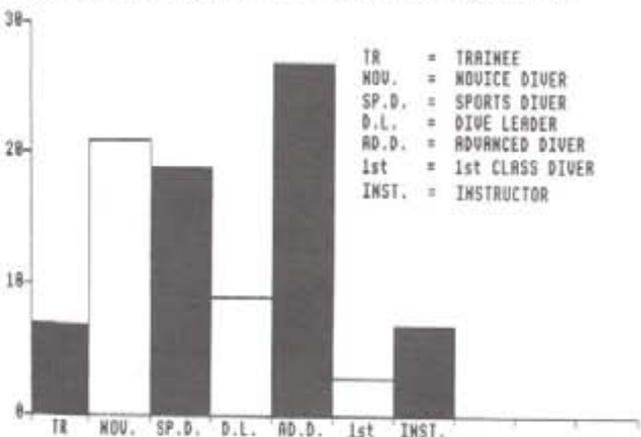
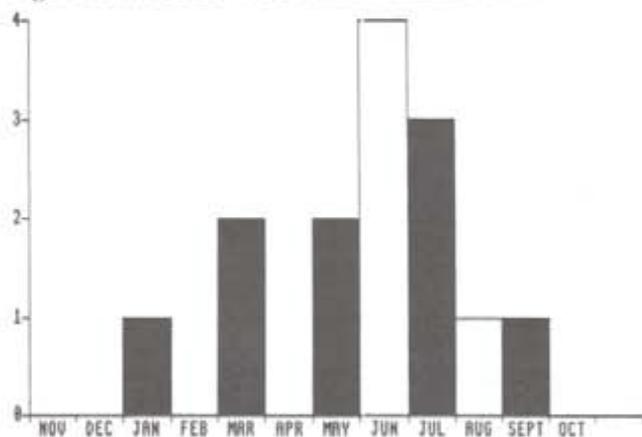


Figure 5 was compiled from the 93 reports where the qualification of the diver was known. The abbreviations along the bottom refer to the different diver grades, starting with Trainee on the far left to Instructor on the far right. It is clear that if you can't find a First Class Diver to dive with, the next safe bet is a Trainee, or an Instructor. Definitely avoid Advanced Divers, as they would appear to be bad news, if this trend were to continue.

I began this presentation by referring to perspective when looking at incident figures. I would like to take a more detailed look now at the various incident types and the lessons we can learn from the pattern, beginning with the fatalities.

As I stated earlier, there were 14 fatalities with 8 of them being BSAC members. Figure 6 shows the breakdown of fatalities over the incidents year. As you can see, June was our worst month with 4 recorded, with a further 3 in July. Figure 7 shows BSAC fatalities and membership over the last decade. You need to understand that the vertical axis shows two sets of information. Fatalities are shown in actual numbers by the columns, while the membership, in thousands, is represented

Fig 6 FATALITIES – MONTHLY BREAKDOWN



by the line. This year, for example we had the same number of fatalities as in 1978, when our membership was some 8,000 less than it is now.

No one would disagree that any fatality is one too many, yet I don't see any evidence that this has been a bad year in comparative terms. Indeed, I was speaking to a Coroner after an inquest I attended recently, and he told me that he had dealt with 8 climbing fatalities in his one 'patch' this year. Also many more people drown in his area, trying to step from their dinghy 'tenders' to their yachts after a night in town, than amateur divers pursuing their sport.

Fig 7 BSAC FATALITIES 1975-85

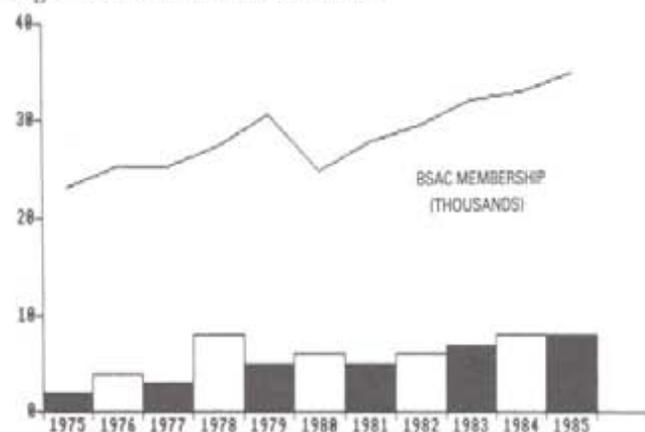


Figure 8 was drawn after dividing our membership total each year, by the number of fatalities in that year. When studying this it is important to realise that the lower the column for each year the greater was the overall risk. In 1985, for example, your chance of having a fatal accident was 1 in 4,357 where in 1984 it was 1 in 4,119. The best year, on the graph, was 1975 when the figure was 1 in 11,602. The worst-ever year, not shown here, was 1972 when he had a 1 in 1,704 chance of becoming a fatal statistic.

Fig 8 BSAC FATALITIES PER 1000 OF MEMBERSHIP

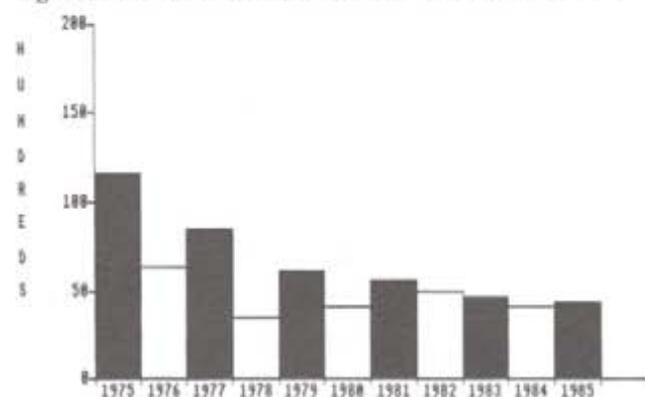


Fig 9 AMATEUR DIVING INCIDENTS – 1985

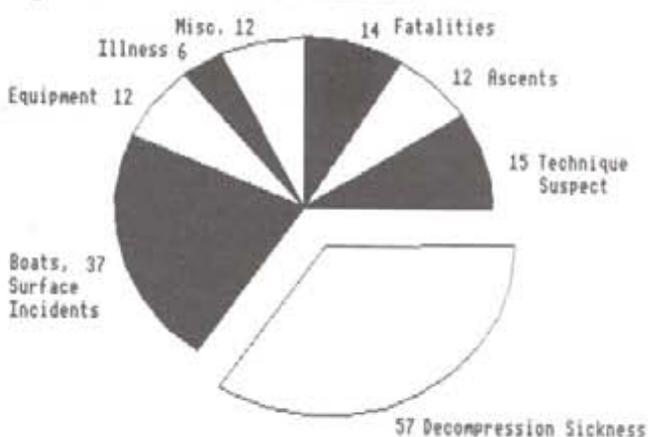


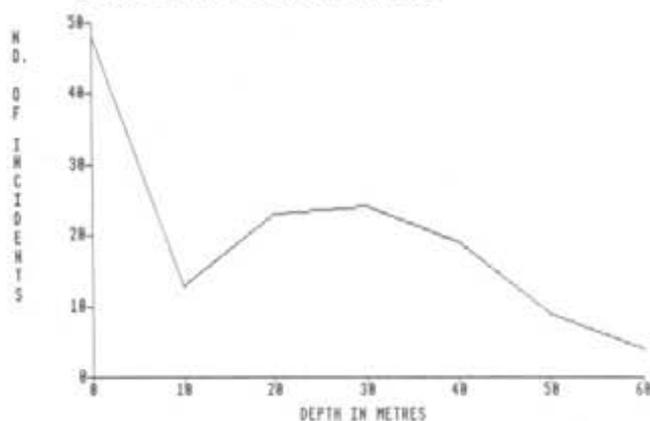
Figure 9 shows the breakdown you have in the printed report. Referring to the fatalities section, there are lessons to be learnt from the 14 deaths this year. Analysing the incidents one can pick out various cause factors. I would say that faulty technique was involved in four of them and error of judgement/foolhardiness in five. Two had illness involved, two involved sharing air and in two the divers were separated. At least two of the subjects were overweight and narcosis was involved in one. Three were alone when they died but only one of these was a true solo dive. In three cases the deceased suffered massive air embolisms before they died. One of the fatalities has not been analysed as, in spite of being a BSAC member, I have still not received a report.

There is a possibility that one of the divers died as a result of a tight neck seal on a dry suit pressing on the carotid sinus. Most of you have probably read about this phenomenon in the article by Cathy Shennan in the latest NDC Bulletin. If the carotid sinus in the neck is activated, as is possible with a tight neck seal, particularly of the 'fold over' type, blood supply to the brain is reduced and unconsciousness can occur. In this particular incident the deceased had complained earlier, of a tight neck seal, and on the dive in question, suddenly stopped on ascent at 20m, was seen to wave his arms as if in distress, at the same time as he was seen to be adjusting his dry suit controls. Because of extreme negative buoyancy, at this stage, he sank rapidly in spite of the efforts of his buddy to raise him. Earlier in the week the subject had had a similar problem at the same depth on ascent and on this occasion had surfaced safely.

One of the fatalities this year really brought home to me the diligence and care that DOs/Dive Marshals need when running dives. On this occasion, a young female diver from a Polytechnic branch, known to be of a nervous disposition, was paired up with a so-called experienced diver who was a stranger to the branch. His word for being experienced was taken and they were allowed to dive in some 12m of water. During the dive, the leader had regulator problems with water becoming mixed with the air supply and it is thought, in an abortive attempt to share, that he grabbed the deceased's mouthpiece. Both divers were recovered from the surface with the girl dead and the buddy with a severe pulmonary barotrauma. The girl is thought to have died from the same. Later reports state that the "experienced" buddy had had one dive several years previously.

Decompression sickness continues to account for the largest reported category of incident and for the purposes of this report I intend to cover this subject last. Surface and boating incidents continue to outnumber those occurring at depth and Fig. 10 displays one or two interesting features. Although there are only 37 listed surface incidents in that category, in your report – if you count those surface incidents which fall into one of the other 7 categories – there are a total of 48. It is perhaps surprising that the least safe place, in terms of the risk of having an incident, is at the surface. One has got to remember, of course, that the chances of surviving an incident

**Fig 10 DEPTH RANGES AND INCIDENT OCCURRENCE 1985**



is also much greater at the surface, and that incidents at depth are always potentially more serious. The graph shows clearly that in terms of underwater incidents, the range from 20m to 40m accounted for the most in 1985, with relatively few below 50m. Very few amateur divers, however, venture to these limits and the risks of decompression sickness at these depths is very much greater than at shallower depths.

The poor weather this year, not surprisingly, meant a spate of capsized boats. The sand bar at Challaborough, in Devon, saw at least 4 Branch boats capsize in heavy seas, with the loss of much equipment but thankfully no lives. At least one Branch inflatable was capsized when it was broached by a large wave as it approached the beach. The cox was attempting to turn the bows to the sea in an attempt to 'kedge' the boat in using the anchor. This is a very doubtful manoeuvre in very rough seas as all engine power is lost and unless you have very alert crew members it is easy to turn side on to the waves.

Some time ago I discussed rough beach landings with members of an ILB crew and they dismissed kedging as a poor method. They maintain that the boat should be driven straight up the beach, on the top of a suitable wave. Once carried by such a wave you are neither going to catch the wave ahead, or be caught by the one following.

One worrying aspect of diver practice with boats this year, has been the abuse of emergency flares carried by divers. On at least two occasions, divers have used orange or red signal flares merely to signal the boat. These, of course, have been taken to mean an emergency by the Coastguard, and the relevant services activated. Red or orange flares must only be used in an emergency and if many divers are using signal flares perhaps it is time that such flares and their colours, are standardised.

Perhaps the craziest piece of dive planning, this year, occurred when a diver in a boat which had pairs underwater, was attracted by the sight of two other divers surfacing. Upon investigation it was discovered that these two had been left by their boat which had headed, for some reason, to shore. It finally returned some 20 minutes later.

Buoyant ascents accounted for 12 incidents where divers, by and large, got away with it and another 14 when decompression sickness occurred. Buoyancy systems have not been fully grasped by many divers and more than one diver, this year, has discovered that there aren't enough hands to control buoyancy, on ascent, when air is introduced to both dry suit and lifejacket. Many of these divers further complicated matters, because they found they were also having to cope with a bag of some description.

Personally, I find that very fine buoyancy control is possible just using the suit and I no longer use a direct feed to the jacket. This is sometimes a problem as some regulators haven't enough medium pressure ports for a spare mouthpiece and two direct feeds. Because many divers have been used to using lifejacket systems to control their buoyancy I believe that for many, old habits die hard.

A good example of the 'Incident Pit' occurred on a dive where an assisted ascent from a 36m dive became necessary. The ABLJ cylinder was found to be empty when the assisted ascent changed to an attempted buoyant ascent. The weightbelt was ditched and on the ascent the rescuer's knife became entangled with the shotline. The subject released it. When they reached the boat the subject was exhausted on the dive ladder and was found to be kneeling on the second stage of the rescuers' regulator which he had spat out. The latter was being dragged under by the rocking motion of the boat. Happily both survived.

Poor technique and equipment problems continue to cause quite a few incidents. Too much lead with membrane dry suits is still common. How often do you see weightbelts where it is difficult to see the belt for the number of lead weights? It seems to be a ready assumption that dry suits need huge amounts of lead and there is also a reluctance to release weightbelts to achieve positive buoyancy. There are dead divers who would be alive today if they, or their buddies, had released a weightbelt. In the days before ABLJ's the release of a weightbelt was one of the golden rules for survival underwater. In latter years we have seen the opinion that because a lack of weightbelt leads to surface difficulties, in particular the legs floating up, it should not be released. Another reason is that divers are worried about uncontrolled ascents if the belt is ditched. It is better, however, to be 'bent' on the surface than dead on the bottom. Ditching of the weightbelt is still seen as a vital emergency procedure.

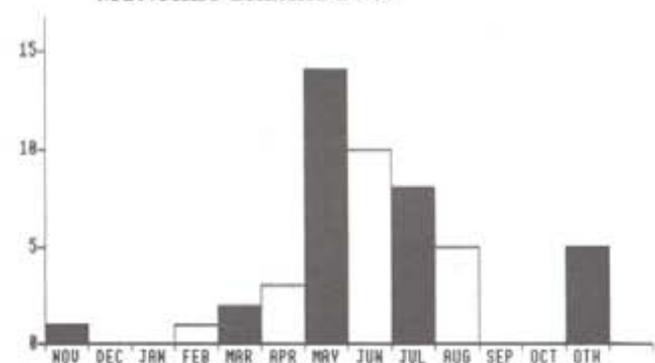
Perhaps the most bizarre equipment report occurred when a diver complained of sinus-type headaches following a diving trip. At a later date he sent his regulator for service and it was found to be internally coated with a black powder. Internal inspection of the cylinder revealed an 'egg cup full' of the same. Analysis showed it to be charcoal and it was thought to be the remains of a charcoal compressor filter which had presumably disintegrated while under pressure and had entered the cylinder.

Illness before and during a dive, apart from decompression sickness, is quite a small category. The most serious case this year involved a university student diver who is still paralysed after an 'innocent' dive. The problem was diagnosed as a viral infection of the spine rather than a bend.

The miscellaneous section contains the usual false alarms, often with good intention, and includes net entanglement. There have been very few reported net entanglements this year, although one of these resulted in a Type 2 bend which required 5 days of recompression using oxy-helium. Divers are perhaps more aware of the dangers of netting because of the publicity the BSAC gave to the problem and are entering the water with the means to deal with it. It is likely that at least one local Sea Fisheries Committee will shortly ban indiscriminate netting and if this happens the others are likely to follow.

Finally I would like to deal with decompression sickness and my attempts at more detailed analysis of bends in amateur divers. Figure 11 shows quite a dramatic increase in May and

**Fig 11 DECOMPRESSION SICKNESS MONTHLY BREAKDOWN**



June and it is clear that some divers are not preparing themselves well enough after the winter lay-off. Attention must be taken to 'work up to depth' and to get reasonably fit before diving. The start of the main diving season, of course, is bound to lead to a greater 'hit rate' through sheer increase in numbers.

**Fig 12 1985 DECOMPRESSION SICKNESS ANALYSIS**

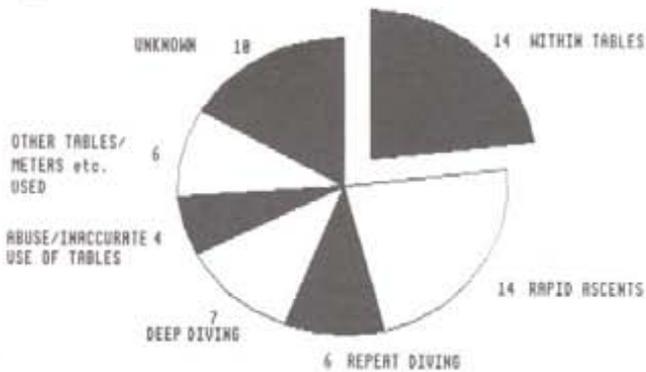


Figure 12 gives a breakdown of the 57 bends cases reported in sufficient detail, where the cause of the bend has been identified. Although we have greatly improved our 'data capture' in recent years there are many bends not reported. The only way we will get an accurate picture of the size of the decompression problem is when we gain accurate figures from recompression chambers.

At the beginning of the year I sent out simple pro-formas to all UK chambers and an explanation of what we are trying to do. The response has been very disappointing with only the chamber at Bovisand and one in Gt. Yarmouth sending me any information. The total of 57 bends probably represents only just over 50% of actual numbers. For example, an unofficial figure I received, states that MOD chambers have treated some 50 amateur divers and I have details of only about 5. Moves are currently underway to eliminate this gap in our information.

What is outstanding as you study the analysis is the number of bends which are apparently 'within the tables.' The 14 in this category include 4 where there is not much information and it is possible a rapid ascent may be the explanation. Two are the results of repeat diving, close to the tables, but the other 8 would appear to have occurred when divers have obeyed the rules. Some divers, of course, lie about depth and time yet several of the dives in this category had depth and time verified. This only shows that no table in the world can guarantee protection against decompression sickness. 3 of the 8 were embolisms with normal ascents and only one of these, where the diver had had excess alcohol the night before and was very cold in the water, had unusual circumstances.

Divers need to be aware of the build up of residual nitrogen, especially when on a week's diving holiday. Excess nitrogen does not disappear after the 'magical' 6-hour gap between dives and it is very easy to accumulate many hours before total desaturation to 1 bar will occur. At the end of a week, an apparently innocent dive is enough to bring on the onset of decompression sickness, the proverbial 'last straw'.

An equally large number of bends occurred as a result of rapid ascents. There were 10 confirmed and suspected air embolisms this year. The most unusual and untypical occurred to a 'depressed' redundant, non-diver trained, Irish stuntman who pulled himself down a rope to some 20m with a 'James Bond' type intra-oral breathing device. He rapidly made the surface after choking on this and began to feel unwell with chest pains. He entered the hotel bar, downed 2 'large' vodkas and promptly collapsed on the carpet.

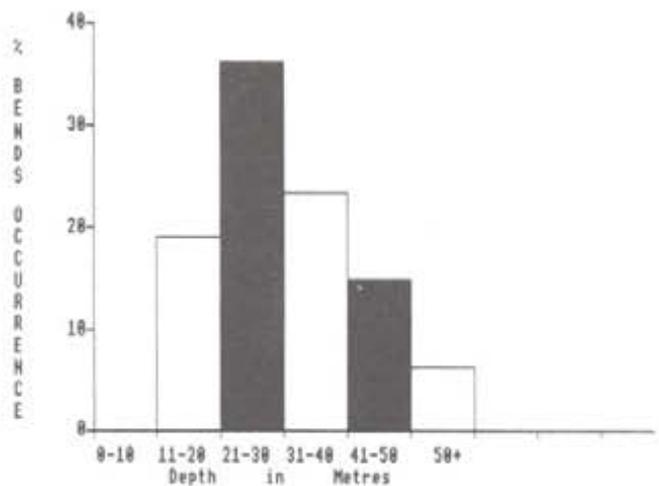
I feel there is a problem area when divers inadvertently stray beyond no-stop times. Their reaction is to swim as quickly as possibly out of the danger area when this is the worst thing they

can do. A normal, even slower than normal, ascent is called for in these circumstances.

Only 4 cases were the result of abuse of tables and a similar small number of 6 when divers used other tables or decompression devices. Of the latter, we had the case of the diver who didn't understand tables and used two decompression meters, based on Italian tables and took the average to be his schedule. He had completed two 46m dives within 2 hours of each other and suffered a Type 2 bend. It was his second such bend in 2 years.

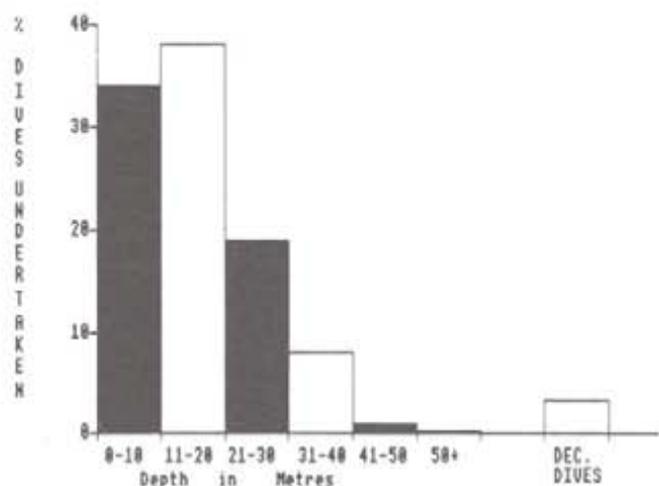
A few divers this year have had their second bend and one must question the present diving medical procedure. No diver who has suffered a bend should dive before a thorough medical and, if necessary, clearance by a Referee. There is no sure way of this occurring, however, as the BSAC Rule only insists on a medical on joining. Many Branches have their own rule, which insists on medicals at regular intervals, but the Club does not. I believe this is a 'nettle' which the BSAC will have to grasp, as how long can a responsible organisation, the governing body of the sport, allow a system where the only medical examination may have been 20 years before the diver had the incident?

**Fig 13 BENDS OCCURRENCE AND DEPTH**



Last year, at this Conference, very deep diving was seen to be a grave cause for concern. Deep diving, below 40m accounted for only 7 of this year's bends and of these only 4 were below 50m. Figure 13 shows an analysis of bends occurrence and depth. As can be seen, the greatest risk area, this year, was between 20 and 30m with the next highest risk zone between 30 and 40m. It is probably true that fewer divers ventured below 30m therefore the risk to those was greater. This pattern of bends is borne out by the final graph (Figure 14).

**Fig 14 DIVE SURVEY**



May I take this opportunity of thanking all DOs who sent in information and made this survey possible. Of the simple questionnaires sent out, 151 were returned in time for analysis from a current total of 952 Branches. The graph is the result of itemising 45,804 dives submitted by 5,655 members. This is an underestimation of how much diving took place as many returns listed number of dives rather than how many people took place on them. As can clearly be seen most of our members dive shallower than 30m. Only 3.4% of the dives had planned stage decompression. Only 1% were below 40m and only 0.25% below 50m. This last figure represents 87 divers in our total of 34,861 members. I am not naive enough to believe that this is the total number venturing on deep dives. I firmly believe, however, that we are dealing with a small minority who venture beyond the recommended depth limit. Although 50m is the absolute limit, the NDC recommends that 40m be regarded as the maximum depth most divers should aim to reach. There is strong evidence that narcosis at this depth badly affects the majority of sports divers.

Certain areas, typically the English Channel, attract groups of wreck divers who have cleaned out the wrecks at 30m, have done quite a lot to those at 40m and are currently working deeper. The vast majority of BSAC members appear to be following recommendations by staying relatively shallow and concentrating on no stop diving. I don't think that we have a deep diving epidemic but are dealing with a minority."

#### QUESTIONS

**Andy Ryan (HMS Vernon).** "You said that the most important factor was 'risk rate' rather than absolute numbers, and yet in the decompression figures we see 4 dives which were below 50m that caused DC problems out of your estimate of 87 divers who dived that deep. That seems a very high proportion - 7%.

Should BSAC not come down more firmly against diving at that depth?"

**Dave Shaw.** "It is true that the deeper you go, the greater the risk. We have laid out our considered advice very firmly in *Safe Diving Practices*, as well as in articles in the *NDC Bulletin* and in *Diver*. I think that we have come down firmly against very deep diving."

**Mike O'Cane (Swansea).** "You have pointed out the dangers of decompression sickness on long diving holidays, as a result of the gradual build-up of nitrogen over the period, but it was my understanding that you should build up your depths gradually towards deep diving, and so carry out the deeper dives towards the end of the period. Professional 'cowboy' divers seem to get away with murder, diving deep every day, but if they lay off for a couple of days, they get into trouble with decompression sickness. How is this so?"

**Dave Shaw.** "It is true that people do work up to deeper dives, but I do not think that it matters whether you do or not. The fact that you are diving regularly to 35m+ every day accumulates enough residual nitrogen to trigger a bend towards the end of the week. Some people get away with it, for the whole problem with decompression sickness is that no two people are alike, and there is an area where people need to be concerned.

People imagine that nitrogen in the system miraculously disappears overnight, or in the six hours between dives. My idea is to alert you to the fact that this is not the case; you can, in fact, accumulate quite a build-up.

One of the outstanding features of the Deco-Brain is that the amount of desaturation time is shown for you, which may be 25-26 hours after a couple of days of quite ordinary diving."

#### APPENDIX 1

### RECORD OF MAJOR FACTORS OCCURRING IN INCIDENTS, 1982-1985

Code	Item	1982	1983	1984	1985	Code	Item	1982	1983	1984	1985
1	Aborted dive	11	17	13	8	33	Malice	0	1	2	1
2	Assisted ascent	7	9	8	7	34	Motor	6	7	11	12
3	Buoyant ascent	14	9	9	19	35	Narcosis	1	2	1	6
4	Emergency ascent	1	7	8	6	36	Out of air	11	7	8	8
5	Other ascent	2	1	1	1	37	Pre-dive check	2	1	8	4
6	Aural barotrauma	7	10	10	5	38	Repetitive diving	8	3	19	7
7	Pulmonary barotrauma	1	2	4	10	39	Ropes	2	2	1	2
8	Boat trouble	19	15	28	13	40	Rough water	4	5	10	17
9	FATALITY	9	9	13	14	41	Bad seamanship	6	7	10	10
10	Good practice involved	10	11	5	6	42	Good seamanship	0	0	0	2
11	Illness	2	11	8	6	43	Separation	9	12	19	14
12	Injury	18	25	24	4	44	SMB absent	8	6	15	7
13	Lost diver(s)	15	21	31	18	45	SMB inadequate	2	5	1	1
14	Resuscitation	3	4	3	2	46	Solo dive	10	5	9	2
15	Unconsciousness	5	7	7	5	47	Three diving together	7	8	8	2
16	Embolism	3	0	7	10	48	Training drill	4	3	11	1
17	ABLJ	10	4	28	3	49	Training inadequate	11	16	9	12
18	Breathlessness	4	8	29	5	50	Sharing	7	4	5	4
19	Buoyancy/weight	7	4	7	16	51	Deep dive (30m plus)	18	30	50	41
20	Carelessness	16	14	9	13	52	Low vis. underwater	3	1	2	4
21	DV performance	6	10	17	2	53	Disregard of rules	14	20	34	14
22	Equipment - faulty	17	24	2	16	54	False alarm	2	2	3	6
23	Equipment fitting	2	2	2	6	55	Cold	7	8	4	5
24	Equipment use	4	9	8	12	56	Dry suit	3	2	5	13
25	Equipment wear	0	1	5	2	57	Divers underwater	137	127	132	117
26	Equipment inadequate	6	3	5	2	58	Divers on surface	18	15	73	48
27	Fire/explosion	1	0	2	0	59	SMB contributed to problem	—	—	—	3
28	Foul air	0	1	1	2	60	Low surface visibility	—	—	—	2
29	Fuel	3	0	1	3	61	Nets	—	—	—	2
30	Hypothermia	0	3	2	6	62	Boat propeller	—	—	—	1
31	Illness beforehand	4	4	6	5						
32	Ignorance	6	11	11	19						

## INTRODUCTION

Incidents have been grouped according to type under eight categories:

**Fatalities, Decompression Sickness, Ascents, Boating/Surface Incidents, Technique, Equipment, Illness and a Miscellaneous Section containing False Alarms, Net Entanglement, Ear Problems, etc.**

The nature of many diving incidents, of course, involves an 'Incident Pit' situation with more than one cause. A bend may have been the result of a buoyant ascent which may, in turn, have been the result of a regulator malfunction. In this example you will find the incident listed under 'Decompression Sickness'.

Each report has a date listed, together with its reference number. The depth is given in the report, only when it is relevant, as is other information such as qualification of the diver, location, etc. The only 'Letter Code' attached to each incident report, relates to membership:

**B = BSAC Member. I = Member of Independent Club or Non-BSAC Diver. U = Membership unknown.**

## FATALITIES

**26/85 Jan., 1985. FATALITY.** Trio dived under thin ice in 5m deep pond. Surface lines used but no buddy lines. Two very experienced divers with a novice on her first open water dive. Deceased was experienced diver who brought up the rear of the threesome. After they had submerged a few minutes, air in large volumes was seen to appear and a diver, just under the ice, was swimming rapidly towards the shore attempting to break through the ice. He sank approx. 2m from the bank where other divers had noticed something wrong and almost managed to grab him. These gave an emergency signal down the line and recalled the other two divers. The other experienced diver then started an underwater search and recovered the body with mask off and mouthpiece out. He was unable to give EAR because of a full face mask. Deceased was using a borrowed regulator which it was later stated "Was not pulling very well." **I.**

**40/85 March, 1985. FATALITY.** Dive school proprietor diving with trainee. Deceased was in habit of carrying extra weights in his suit pocket in the event of trainees being underweight. He ran out of air and attempted a 'shared' ascent. On the ascent he aborted this and headed for the surface, didn't make it and sank again. No attempt was made to ditch the weightbelt. No reports of the body being found. **I.**

**44/85 March, 1985. FATALITY.** Dive in deep inland site with tunnel and trees as obstructions. Dived with 12l cylinders to depths in excess of 50m, entered tunnel in excellent visibility only to stir up sediment. No lines used. Deceased ran out of air in the tunnel. Buddy escaped but ran out of air on ascent. Buoyant ascent from 30m. No ill effects. Seldom dived site, and branch D.O. had no prior knowledge of the dive. **B.**

**53/85 May, 1985. FATALITY.** At 20m on ascent, following a dive to 30m, a diver was seen to vent his dry-suit and to start flapping his arms. Extreme negative buoyancy. Sank feet first and buddy approached him in a head down position. Buddy tried unsuccessfully to ditch deceased's weightbelt and to put air in suit/lifejacket. Air in the buddy's lifejacket did not arrest descent. Buddy had to let go in 40m+ of water. Deceased had had a problem on ascent from an earlier dive in the week. Possible "carotid sinus syndrome" with a very tight neck seal which he had complained about!!! The body has not been found. **B.**

**67/85 June, 1985. FATALITY.** Inexperienced diver died on wreck site when his buddy entered wreckage. Diver who died was told to stay on the outside from where he disappeared. He was seen by two other divers and from their description of his reactions, was thought to be suffering from narcosis. Body found short time later in 36m with 55 bar in set but with lifejacket cylinder empty and regulator mouthpiece missing. **B.**

**71/85 June, 1985. FATALITY.** Non-affiliated diver died on

solo dive from beach. Body seen to surface and sink again. Found short time later in shallow channel. **I.**

**73/85 June, 1985. FATALITY.** Very experienced diver lost weightbelt, wearing a dry-suit, in shallow tunnel. Surging water at surface, thought to be responsible for pushing him against a sharp object and rendering him unconscious. Found some time later, on the surface, with some of his equipment missing and showing signs of having been dashed against rocks. **B.**

**76/85 May, 1985. FATALITY.** Completely untrained diver taken on dive by two friends with very limited experience. Boat would not start after divers had exhausted themselves trying to launch it in "hot" conditions. His buddy left the water (3m depth) because of cold and then the subject surfaced some distance from boat in obvious distress. Engine failed to start and his buddy eventually swam to him. EAR was not attempted. Flares were fired and were spotted by passing light aircraft who alerted harbour authorities. **I.**

**84/85 July, 1985. FATALITY** in flooded quarry. Husband and wife dived together to 27m. Wife got into difficulties, sharing was unsuccessful. Husband surfaced alone. Wife's body found shortly after by other divers. **I.**

**98/85 July, 1985. FATALITY.** Young female diver described in one report as being "nervous" and "lacking confidence" was allowed to dive with buddy who told the dive marshal he was "experienced". During the dive (Max. depth 12m) the buddy had water in his regulator, was overweight and tried to surface. The weightbelt could not be removed. Abortive attempt to share in which buddy either grabbed deceased's regulator or would not give it back when he had taken air. Both divers recovered from the surface with the girl dead and the buddy having suffered an explosive "bend". It was later discovered that the surviving "experienced" diver had had one dive several years ago!!! **B.**

**99/85 June, 1985. FATALITY.** Diver working on archaeological site at 38m suddenly gave signs of obvious distress. Buddy gave immediate assistance and in the subsequent "struggle" the deceased lost his mouthpiece and mask. Air was put into his ABLJ and he was allowed to float to the surface while the others decompressed. Underwater it was noted that his teeth were clenched and that he was staring straight ahead. A doctor on the surface gave immediate treatment without success. **B.**

**110/85 Sept., 1985. FATALITY.** Novice diver and his Diving Officer were diving on a wreck at 20m with horizontal visibility between 4 and 6 metres. Surface conditions excellent. His buddy asked him to surface as both sets of air were getting low. The divers became separated when they started their ascent, due to stirred up sediment. The buddy climbed back into the boat as he had suffered some cramp. After fifteen minutes, when the deceased didn't surface, help was sought from a nearby dive boat and two of their divers found the body with weightbelt still attached, on the wreck. The lifejacket cylinder and jacket were empty, as was the diving cylinder. The cause of death was established as drowning after massive pulmonary embolism. **B.**

**164/85 July, 1985. FATALITY.** Diver disappeared on ascent after diving on a wreck. His body was discovered next day. Pulmonary embolism given as cause of death. Coastguard and newspaper reports only. No further details. **I.**

**165/85 Aug., 1985. FATALITY.** No further details. **B.**

## DECOMPRESSION SICKNESS

**2/85 July, 1984. Bend.** Two divers given recompression for suspected bend. Coastguard report only, no further details. **U.**

**4/85 Aug., 1984. Bend.** Diver caught in SMB line, ran out of air and surfaced "quickly". Diving from charter vessel which alerted emergency services. Coastguard report only. **B.**

**5/85 Aug., 1984. Bend.** Dive on wreck at 36m, bottom depth 40m. Dive time was on limit for 36m depth but it was later confirmed that 38m had been recorded at one time during the dive. Charter vessel skipper not told immediately of diver's condition. Subject recompressed on three separate occasions. Comprehensive branch report highlighted the fact that the subject had not "worked up" to depth and those on board

should have reacted more urgently to the symptoms the subject was displaying. **B.**

**7/85 Oct., 1984.** Bend. Diver taken to doctor's surgery by friends, having displayed signs of decompression sickness. Subject airlifted for recompression treatment. Severe decompression sickness diagnosed. Expected to receive one week of treatment. Coastguard report only. **B.**

**8/85 Oct., 1984.** Suspected bend. Dive at low altitude. Dive brief allowed for a variety of depths and times. Max. depth reached was 24m for 20 mins. which was within no stop time although it exceeded recommended time in brief. Precautionary stop of 5 mins. at 6/7m. 48 hrs. later one of the divers complained of bruising on the arm and pain in it. Sent to recompression chamber but no confirmation of decompression sickness was received. **B.**

**12/85 Nov., 1984.** Bend. Normal dive to 24m for 19 mins. Subject had tingling in left hand and arm, following the dive, which persisted into the evening. Received over 5 hrs. of treatment. Headaches persisted two days but no further symptoms. **B.**

**27/85 March, 1985.** Bend after emergency ascent due to failure to dump air from ABLJ. Ascent was necessary because a regulator went on "free flow" after it was removed to clear "foreign bodies". Dived to 22m for 13½ mins. followed by dive to 18m for 20 mins. some 30 mins. later. Recompressed in chamber. Comprehensive branch report and appraisal. **B.**

**35/85 Feb., 1985.** Bend. Diver air-lifted for treatment. Coastguard report only. **U.**

**42/85 April 1985.** Threesome planned dive to 30m. Spent 17 mins at depths of 40m on one gauge on Day 1. Day 2 31 min. at 22m. Recompression stop of 10 min. at 10m aborted. All three showed signs of decompression sickness. Presented with bill for £247. **B.**

**45/85 April 1985.** Novice undertook 20m dive for 15 min. and on surface complained of stomach cramps. They cleared up on the surface and pair completed further dive to 4m. Cramps returned upon surfacing. Recompressed for 5½ hours. No further details. **B.**

**52/85 May, 1985.** Diver suffered bend after diving to 36m for 20 min. followed by 30 min. at 25m 2½ hours later. Missed 5 @ 10m and 5 @ 5m on first dive and was off the table on the second. No decompression stops undertaken. On second day dived at altitude for 20 min. @ 20m. Symptoms developed driving home from altitude dive and worsened overnight. Recompressed. **B.**

**54/85 May, 1985.** Air Embolism. Experienced diver became unconscious after 5 mins at 32m. Relatively inexperienced buddy brought him to surface using ABLJ and finning. Diver became conscious at 15m and then controlled his own ascent. Collapsed upon entering boat with severe chest pain and breathing difficulty. Air lifted to chamber for successful treatment. Air analysis showed minute traces of toluene, a degreasing agent. **B.**

**62/85 May, 1985.** Bend after dive to 25m for 11 mins. Previous day had undertaken dive to 34m for 16 min. No apparent reason for bend but diver advised not to dive again. **B.**

**63/85 June, 1985.** Non-BSAC diver who did not understand decompression tables had bend after diving in the region of 46m for 20 min. followed 2 hrs later by dive to similar depth for similar time. 15 mins decompression at 4m on 1st dive and 20 mins at 4m on second. This was his second bend in two years with similar dive profiles. As a decompression guide he used two decompression meters and took the difference between the two as the safe schedule. **I.**

**68/85 April, 1985.** Bend after diver dived to 33m for 7 min. followed 53 mins later to 6m for 15 min. followed 2½ hours later by dive to 13m for 15 min. 6 min. decompression at 5m carried out on 3rd dive. **B.**

**70/85 May, 1985.** Suspected embolism after normal dive and ascent. 32m for 18 min. **B.**

**72/85 May, 1985.** Suspected embolism after novice diver had dived to 14m for 30 min. Ear problems experienced and diver headed for surface without warning. Faster than normal ascent and some panic on the surface, resulting in wrenching out of ABLJ drain plug. **B.**

**75/85 May, 1985.** Bend after diver had had four dives to 28m/30m in two days. Dives were "within the tables" with correct surface intervals but on the limit of no-stop times. Following this incident the branch made a ruling only to allow one deep dive per day. **B.**

**78/85 May, 1985.** Air Embolism after professional stuntman tried out "Hollywood" style intra/oral compressed air source. After reaching unknown depth he tried breathing from it, choked and ascended while holding breath. Chest felt tight but he went to hotel and had two "large" vodkas before collapsing in hotel room. Successfully treated at local chamber. **I.**

**81/85 June, 1985.** Diver suffered an air embolism after a buoyant ascent in a dry suit, due to faulty inflation valve. Recompressed three times. **B.**

**82/85 July, 1985.** Diver suffered bend after 27 mins at 26m, collecting lobster pots. Told not to dive again as he had been "bent" in 1984 and treated at the same chamber after diving very close to the tables, on a repeat dive schedule, on that occasion. **U.**

**88/85 June, 1985.** Very experienced diver suffered spinal bend after dive to 35m for 16 mins with planned stage decompression being carried out. Depth control at the 5m stop became difficult because of faulty dry suit dump valve. Had had dive to 42m the week before and had accidentally missed some 10 mins of decompression at the 5m stage. Possibility that dehydration, due to training for a marathon, may have contributed to the incident. **B.**

**89/85 May, 1985.** Diver suffered spinal bend after dive to 22m for 40 mins. Two minutes over no stop time for that depth. A quite long exposure for a relatively shallow dive. **B.**

**92/85 July, 1985.** Diver suffered air embolism and possible secondary decompression sickness after buoyant ascent in a dry suit from 20m. Had been overweight at the end of the dive because he had been collecting fishing weights. The valve on his ABLJ was "rather stiff" and he "suddenly" found himself at 2m. Advised to give up diving. **B.**

**96/85 July, 1985.** Diver became unconscious on a shared ascent after he ran out of air, as a result of a badly leaking twinset manifold. There were overweight/buoyancy problems with a borrowed weightbelt which resulted in the subject releasing his cylinder harness instead of the former. Subject treated in chamber for a possible embolism. **B.**

**97/85 July, 1985.** Suspected embolism after a "normal" dive to 20m for 20 min. Subject was not picked up for 15 mins. after he surfaced, because of a boat fault and when picked up was hypothermic. Subject had had "heavy" night in the pub. Embolism without obvious cause. Subject advised not to dive again. **B.**

**102/85 May, 1985.** Bend. Diver went to 26m for 24 min. on wreck. Symptoms occurred 9 hrs later. Had dives to 21m for 28 min. and 2 hrs 3 min. later to 15m for 27 min. with stops for 5 min. at 10m and 5 min. at 5m, the previous day. Reported to have been cold on the way to dive site. **I.**

**104/85 May, 1985.** Bend. Diver recompressed in chamber. Coastguard report only. No further details. **U.**

**105/85 June, 1985.** Bend. Diver recompressed in chamber. Coastguard report only. No further details. **U.**

**106/85 June, 1985.** Bend. Diver suffered severe bend after being caught in a tangle net. Recompressed using helium. Coastguard report only. No further details. **I.**

**107/85 May, 1985.** Bend. Diver recompressed in chamber. Coastguard report only. No further details. **U.**

**122/85 Sept., 1985.** Bend after dive to 18m for 15 min. followed 1½ hrs later with dive to 16m for 20 min. followed 1½ hrs later by dive to 13m for 5 min. Drove over hill and developed symptoms 1½ hrs later. Type I bend diagnosed. **I.**

**123/85 Sept., 1985.** Bend on a drift dive when the cover boat decided the divers were too close to a moored boat and recalled them by pulling on the SMB line. "Pendulum" effect with a drifting boat in force 3-4 winds brought them to the surface too rapidly. Reel was too stiff to be jettisoned. **B.**

**128/85 Sept., 1985.** Bend after dives to 24m for 20 mins followed 10 mins later to 20m for 5 mins and 30 mins later to 4m for 30 mins. Assisted ascent training in inland quarry. **B.**

Symptoms appeared 1 hour after dive. 2½ hrs of treatment needed. **B.**

**130/85 Sept., 1985.** Bend after 38m for 16 mins. Skipper of charter vessel missed the wreck with shotline. Normal ascent without stops. Symptoms appeared on return journey but by the time he reached the chamber they had disappeared. Not recompressed but was kept under observation. **B.**

**132/85 Aug., 1985.** Bend after buoyant ascent from dive to 24m. Subject had bag of scallops and inflated BOTH dry suit and ABLJ. Within 5 mins symptoms appeared so subject donned another cylinder and conducted in water recompression. Worked out his own schedule which relieved symptoms.

(In water recompression is likely to increase symptoms and is never recommended around the U.K. or in parts of the World where chamber facilities are available. The fact that this diver appears to have "got away with it" is more due to good luck than judgement. Therapeutic recompression takes hours, rather than minutes, and should never be contemplated, in normal circumstances.) **B.**

**133/85 Aug., 1985.** Bend after dive to 40 metres using Italian tables and a decompression meter. Diver had no idea of what he had done to himself and complained about treatment because he "was on holiday and wanted to dive again". Treatment estimated to cost £40,000 and the chamber is reported to be suing the club to reclaim the money. **I.**

**134/85 Sept., 1985.** Bend after dive to 30m for 18 mins. Normal ascent. Depth confirmed using boat echo sounder. **B.**

**135/85 Sept., 1985.** Embolism after dive to 12m. Subject was sea sick before and after the dive. On ascent his mask was partially full of water but bubbles were coming from his regulator mouthpiece. Symptoms delayed 30 mins. **B.**

**139/85 June, 1985.** Bend after 7 min. dive to 45m while diving from a charter vessel. Coastguard report only. **B.**

**143/85 July, 1985.** Lifeboat recovered diver suffering from the "bends". Coastguard report only. **U.**

**147/85 March, 1985.** Type II bend after dive to 17m for 20 mins. No further details. **I.**

**148/85 May, 1985.** Type II bend after dive to 60m for 15 mins. Subject had stopped for 5 mins at 6m and 25 mins at 3m. Had been using USN tables. **B.**

**149/85 May, 1985.** Type II bend after dive to 60m for 10 mins. Decompression stops carried out but no details. Had been using USN tables. **B.**

**150/85 May, 1985.** Type I bend after 5 mins at 50m. No further details. **I.**

**151/85 June, 1985.** Type I bend following 42m dive. Decompression stops but no details. **I.**

**152/85 June, 1985.** Possible Type II bend after dry suit buoyant ascent following dive to 20m for 38 mins. **B.**

**153/85 June, 1985.** Type I bend after dive to 22m, time unknown. Diver waited 1 month before seeking treatment. **U.**

**154/85 June, 1985.** Type II bend after dive to 26m for 18 mins in the morning, followed by 13 mins at 9m in the afternoon. No further details. **B.**

**155/85 July, 1985.** Type II bend after "Free Ascent" following dive to 26m for 12 mins. **B.**

**156/85 July, 1985.** Type I bend after dive to 50m for 19 mins. Stops at 9m for 1 minute, 6m for 2 mins and 3m for 8 mins. Subject's buddy had calculated the dive using a dive computer. **B.**

**157/85 July, 1985.** Type II bend after dive to 44m for 15 mins. Stops made at 16m for 5 mins and 3m for 5 mins. Subject delayed in seeking treatment. **B.**

**158/85 Aug., 1985.** Type I bend after dive to 60m for 20 mins. Stops at 9m for 3 mins, 6m for 7 mins and 3m for 27 mins. **I.**

**159/85 Aug., 1985.** Type II bend after dive to 42m for 25 mins. Stops at 6m for 4 mins and 3m for 17 mins. Subject using USN tables. **I.**

**160/85 Aug., 1985.** Type II bend after 11 mins at 32m in the morning and 11 mins at 38m in the afternoon. Subject delayed in seeking advice. No further details. **B.**

**161/85 Sept., 1985.** Air embolism and Type II bend after dry suit buoyant ascent. Depth and time unknown. **B.**

**162/85 Sept., 1985.** Type II bend after 15 mins at 30m. Subject

came up due to separation. No further details but subject had spinal bend 2 years previously. **B.**

#### INCIDENTS INVOLVING BOATS/SURFACE INCIDENTS

**6/85 Sept., 1984.** Diver suffered lacerations to the head after being hit by propeller of charter vessel. Lifeboat brought subject ashore where stitches were inserted. Coastguard report states that diver ROLLED OVER THE STERN of the boat and caught the moving propeller. **U.**

**11/85 Oct., 1984.** Lifeboat called out to rescue drifting boat being used on a BSAC Boathandling Course. It had run out of petrol!!!! **B.**

**16/85 Nov., 1984.** Several members of an overseas branch gave assistance when their charter vessel foundered on a reef. Rescue helped because of rapid and effective response of branch members. **B.**

**17/85 Dec., 1984.** Party of divers rescued from an island by the lifeboat after their outboard motor failed. They "kedged" themselves ashore and lit a signal fire to attract attention and also used a torch to flash distress signals. Effective action by the divers concerned. **U.**

**18/85 Dec., 1984.** Three divers dived at the same time and left an unattended boat which broke loose and drifted away. They managed to swim to nearby vessel which alerted Coastguard. Local boat recovered theirs. Coastguard report only. **U.**

**19/85 Dec., 1984.** Red flare fired from a dive boat proved to be a false alarm. Divers concerned had used the flare as a SIGNAL and this led to a lifeboat launch. They were given a "strong" lecture on the mis-use of pyrotechnics and told that red or orange flares were only to be used in the case of genuine distress at sea. **B.**

**21/85 Dec., 1984.** Diveboat swamped in heavy seas. Lifeboat launched. No further details. **U.**

**24/85 Jan., 1985.** Helicopter called to rescue drifting divers. They dived to a wreck and didn't mark the site. Divers in the boat didn't know the "marks". Those in the water missed the wreck and surfaced after approx. 10 mins. Boat crew were retrieving their anchor and didn't bother to look as they were not expecting the divers for 20 mins. This was the second incident of the day involving the same divers in the same situation. They had fired a flare in the morning but managed to find their divers before the lifeboat was launched. **B.**

**34/85 Feb., 1985.** Three divers in a "small" inflatable were seen by the Coastguard to be in difficulties, trying to paddle against wind and sea. The lifeboat was launched and towed the casualty to safety. Coastguard report only. **B.**

**39/85 March, 1985.** Divers in a lake, also used by sailing boats, were without SMB's and Flag "A". Sailing dinghy narrowly missed diver who surfaced unexpectedly. **U.**

**41/85 April, 1985.** Divers surfaced after rapid ascent. Gave emergency signal, cover boat ditched anchor to pick them up and engine stalled. Flare fired. Petrol pipe had become disconnected and not noticed by boathandler. Rescued by boat from another branch. **B.**

**46/85 May, 1985.** Novice became separated from buddy on descent because of ear clearing problems. Surfaced but was not spotted from the boat (Charter Vessel). Drifted for 2 hrs before being rescued. **B.**

**47/85 May, 1985.** Divers surfaced to find that cover boat was helpless due to failure of outboard motor. Flare alerted passing craft who radioed for lifeboat. Lifeboat passed within 200m of divers but did not see them. Attention eventually gained by holding aloft their yellow "torpedo" type SMB which was very visible, according to the ILB crew. **B.**

**48/85 May, 1985.** Three boats left for dive site in Force 3/4 wind. One of them developed an engine fault and against advice the owner decided to carry on. After dive the wind increased to force 5/6 and the engine on suspect boat would not start. Owner insisted that his boat be towed back and not left anchored on station while everyone else were taken to safety. Towing boat was overturned by large wave while manoeuvring into position. All rescued by third boat returning to site after dropping divers off. Naval vessel later rescued both crippled craft. **B.**

**49/85 May, 1985.** After dive, outboard would not start in worsening sea conditions. Boat swamped and flares sent up after anchor was secured. Tow taken up by another diving boat until tow line parted. Second boat began tow and was successful. RNLI on stand-by and gave cover during second tow. **B.**

**50/85 May, 1985.** Boat in incident 49/85 went to recover lost anchor and to dive. Boat fouled pot line, engine stalled and the boat was swamped. Second anchor was laid and engine would not start. Flares sent up and passing yacht undertook tow. RNLI attended once more to give cover. **B.**

**59/85 May, 1985.** Divers in two inflatables rescue family after their speedboat had capsized in rough seas. Good press coverage and publicity. **B.**

**61/85 May, 1985.** Divers' inflatable capsized in rough seas. Another dive boat which came to their assistance fouled prop around loose rope in water and also capsized. Both boats and occupants rescued by accompanying boat. **B.**

**65/85 May, 1985.** Lost divers diving from charter vessel. Vessel was on station UPTIDE of the divers who surfaced and could not attract attention. Found 4½ miles from dive position. Criticism of dive practices in Coastguard report, i.e. lack of diver flares and poor lookout on boat. **B.**

**66/85 June, 1985.** Divers' inflatable towed back to port by ILB after outboard motor break down. **B.**

**83/85 May, 1985.** Branch inflatable capsized going to assistance of speedboat which had also capsized. The same incident reported in 59/85 involving another branch who were also on the scene. **B.**

**85/85 June, 1985.** Branch inflatable capsized in surf while turning in an attempt to turn the bows to seaward prior to "kedging" ashore with the anchor. (This technique is not highly regarded by RNLI ILB crews.) **B.**

**86/85 June, 1985.** Branch inflatable went out overloaded and with insufficient fuel to combat rough seas and strong tidal stream. Assistance was given by a passing MFV who carried equipment initially and then took them under tow. **B.**

**93/85 June, 1985.** Diver suffered severely torn bicep with internal bleeding as he held the painter of an inflatable which the boat he was in, was about to tow. Before he could make the rope fast, a wave jerked the boats apart and the end of the painter pulled his arm back thus ripping the muscle. **B.**

**94/85 May, 1985.** Outboard motor would not start after one of the plugs stripped threads in the cylinder head. Divers surfaced about 400m from the boat. Distress flare was fired and a nearby diveboat rescued the divers. ILB started to tow them back but was diverted to a more urgent call. Tow taken up by another dive boat. **B.**

**95/85 June, 1985.** Diving inflatable with 6 months old outboard motor suffered disabled gearbox. "Pan Pan" call to Coastguard on radio resulted in rescue and tow by police launch. **B.**

**101/85 June, 1985.** Divers were swept away from their boat upon surfacing due to an engine failure. Divers' personal flare was fired and attracted attention of nearby fishing boat which re-united them with their boat. Loose wire in engine found to be the cause. **B.**

**103/85 June, 1985.** Diving inflatable fired flare when two of the divers failed to surface. Lifeboat and helicopter launched but before a search could be initiated the divers surfaced unharmed. Coastguard report only. No further details. **U.**

**108/85 June, 1985.** Diving boat reported one of her divers was missing and alerted Coastguard with a "Pan" message. Lifeboat and helicopter launched. Diver recovered safe and well before they arrived. Coastguard report only. No further details. **U.**

**124/85 April, 1985.** Dive boat lost divers who were caught in a "sudden" tidal stream. No SMB's used. Divers eventually climbed ashore to raise the alarm. **B.**

**125/85 July, 1985.** Divers surfaced about 200m from charter vessel. One of them was very breathless due to very tight wet suit and panicked slightly. Charter vessel had total electrical breakdown and was unable to pick them up. Divers hung onto nearby buoys until they were eventually rescued. **B.**

**126/85 Sept., 1985.** Dive boat had two pairs of divers down

when the cox was shouted at by two nearby divers. They were from another group of divers and had been left by their own dive boat, which headed for shore. Their boat eventually returned 20 mins. later. **U.**

**129/85 Sept., 1985.** Pair of divers dived to retrieve anchor on wreck in very marginal conditions. Solo boathandler left in boat when large wave overturned it. Alarm raised by man on shore watching through binoculars. Boathandler almost died of exposure and was pulled from water by passers by, taken to a house and revived. Divers were rescued by other craft. Boat equipment/diving equipment lost. **B.**

**131/85 Sept., 1985.** Outboard motor failure in choppy conditions. Flares were fired and a passing craft gave assistance. **B.**

**140/85 July, 1985.** Three divers were swept away from their boat and were picked up by a passing vessel. Two more were picked up by the lifeboat. Dive boat failed to maintain its station. Coastguard report only. **B.**

**142/85 July, 1985.** Divers fired a flare when their outboard motor failed to start. Towed back by passing fishing vessel. **B.**

**163/85 Aug., 1985.** Divers rescued very ill equipped canoeists from about half a mile offshore. Hypothermic and very frightened. **B.**

### ASCENTS

**14/85 Nov., 1984.** Emergency Buoyant Ascent. No further details. **B.**

**15/85 Nov., 1984.** Dive to 30m requiring assisted ascent. Narcosis involved. No further details. **U.**

**22/85 Jan., 1985.** Emergency buoyancy ascent after dive to 35m. Narcosis and cold thought to be contributory causes as one of the divers "blacked out at depth". Dive was after Xmas layoff. Divers separated on ascent when one had buoyant ascent and the other a faster than normal ascent. The latter tasted blood at the surface. Both divers were given a hospital check and the diver displaying blood had a chest X-Ray. Good analytical branch report. **B.**

**29/85 Feb., 1985.** Uncontrolled ascent after underwater separation, regulator free flowed and mask was lost. Buddy surfaced 1 minute later. No after effects. **B.**

**55/85 Feb., 1985.** Free ascent from 18m following regulator "freeze" and free flow. No after effects. **B.**

**56/85 April 1985.** Assisted ascent from 30m after diver had entered wreck with a known faulty manifold on "old" twinset. Substantial air loss from cylinders. **B.**

**60/85 May, 1985.** Buoyant ascent in drysuit after too much air had been inflated. Dump valve not capable of venting fast enough. Wrist seals were constricted by diving watch and compass so venting was not possible. **B.**

**74/85 Nov., 1984.** Buoyant ascent after dive to 32m in flooded quarry. Subject anxious and thought to be suffering from narcosis. Hadn't dived for 2 months prior to this incident. **B.**

**87/85 May, 1985.** Assisted ascent after diver with faulty inflation valve found himself overweight after dive on wreck to 36m. ABLJ bottle on lifejacket was EMPTY when buoyant lift by buddy was attempted. Weightbelt was ditched and ascent commenced. Rescuer became caught on the shotline by his knife and was released by buddy. Rescued diver was exhausted on the ladder of the dive boat and was kneeling on the regulator 2nd stage belonging to his buddy. The latter was being dragged down by the motion of the boat. Both survived but a good example of the "Incident Pit." **B.**

**112/85 Oct., 1984.** Diver made an uncontrolled inverted ascent in a dry suit, losing both fins in the process. Unable to help himself at the surface. Had had no dry suit training. **B.**

**113/85 Oct., 1985.** Diver made an uncontrolled buoyant ascent with an ABLJ after the second stage of the regulator separated from the hose underwater. Had been using an extra long "spare" mouthpiece instead of the normal one on her "octopus" rig. **B.**

**137/85 May, 1985.** Novice diver involved in overseas expedition noticed a fellow diver unconscious and rolling down the slope. He caught her at approx. 50m and brought her safely to the surface with a controlled buoyant lift. The rest of the

party joined them on the ascent and a decompression stop was completed at 3m. **B.**

#### TECHNIQUE SUSPECT

**1/85 April, 1984.** Trainee in 6m of water lost mouthpiece, probably kicked out by a fin. Mask was then displaced. Subject taken quickly to the surface. Some seawater was swallowed. Subject treated for mild hypothermia and shock. **B.**

**3/85 Aug., 1984.** Burst eardrum on trainee's second open water dive. Subject unaware of the problem and had made no attempt to "clear" as he hadn't needed to in the pool. He was fully briefed before the dive but excitement/apprehension was thought to be the cause. **B.**

**32/85 Feb., 1985.** Group of divers diving under ice at inland site. No surface lines were used. One diver suffering from hypothermia was on his SECOND open water dive in a wetsuit. He was incapable of removing any equipment and was completely out of breath. He had separated from his buddy underwater and surfaced alone in considerable difficulty. In another pairing, a diver who had complained about the cold after 5 mins, was taken under the ice again for a further 7 mins. **B.**

**37/85 Feb., 1985.** Divers on a training drill in cold water in a poor visibility docks area. They entered with half full cylinders and one ran out of air. Entanglement in surface and SMB line led to a buoyant ascent. Diver treated for ingestion of foul water. **B.**

**57/85 April, 1985.** Diver, diving as one of two pairs, lost the other three on descent. He surfaced and the others didn't miss him. He tried to find them as they eventually surfaced. One went to raise the alarm while the other two continued with dive. Solo diver made his own way back to shore after rescue boat searched area. **B.**

**58/85 May, 1985.** Lost divers, diving without SMB's, in strong tidal stream. Full air/sea rescue found them under cliffs awaiting rescue. **B.**

**69/85 June, 1985.** Experienced diver took his friend for a dive off the beach. The friend had had no training but was given a "basic briefing" on the beach. Two minutes into the dive, in poor vis, the two became separated and the friend did not surface. After about an hour of "looking and waiting" the Coastguard was called. Diver later found safe and well. **I.**

**77/85 June 1985.** Diver became unconscious on dive to 20m. he was successfully raised with his ABLJ by his buddy after they had used "octopus rig" after his mouthpiece became dislodged. Trouble with dentures caused this problem. When retrieved into the boat he was not breathing and no pulse could be felt. Successful CPR restarted heart and breathing. Rescue boat had oxygen which was effectively used by a doctor who was diving with the party. **B.**

**79/85 June, 1985.** Novice on 1st open water dive in 5m of quite rough water was left on the bottom while her buddy surfaced to ascertain position. She surfaced as her buddy descended. Wave knocked her mask which filled with water. This panicked her and she lost the regulator mouthpiece. Pulled from the water by nearby divers. Treated for shock. **B.**

**80/85 May, 1985.** Due to inaccurate w/w navigation divers on surface became separated in strong tidal stream. Gave distress signal and were rescued by nearby dive boats. **B.**

**114/85 June, 1985.** Because of a shortage of "Advanced" divers, two novices were paired up with one of them being appointed dive leader. The other one suddenly descended and the "leader" forgot to equalise pressure in his mask, trying to catch up. "A ghastly pair of red eyes" after the dive. **B.**

**118/85 Aug., 1985.** On ascent from dive to 44m diver gave "something wrong" signal, vented ABLJ and began to descend again. Buddy acted quickly to re-inflate lifejacket and surface normally. Subject remembers little of the incident but was very disorientated and narcosed. **B.**

**121/85 Aug., 1985.** Novice diver had surface difficulties after dive to 7m in heavy swell. He switched to snorkel breathing and turned on his BACK which allowed water to flood the snorkel. His lifejacket was inflated by his buddy and they were recovered by the cover boat. **B.**

**136/85 Sept., 1985.** Two divers entered wreck in 20m and stirred up sediment to create nil vis. One of the divers failed to emerge from the entry point and eventually exited, minus his cylinder which he had to remove, from a small hole in the wreck. He "kitted up" again on the bottom with the help of his buddy. **B.**

**145/85 July, 1985.** Two divers, with no boat cover, were rescued from a cave at the base of some cliffs by a Coastguard rescue team equipped with ropes. They had been stranded after encountering strong tidal streams. Coastguard report only. **U.**

#### EQUIPMENT INVOLVED

**23/85 Jan., 1985.** Dry suit inflator hose blew off 1st stage of regulator in the swimming pool. **B.**

**28/85 Feb., 1985.** Divers gave distress signal on the surface following a dive. Lifeboat stood by but the divers were rescued by their own companions. Distress was due to the failure of a lifejacket to inflate. Coastguard report only. **I.**

**30/85 Feb., 1985.** 1st dive in dry suit for "Sports Diver". Dived to 20m for 17 mins, dumped air from ABLJ and to quote "sank like a stone." His buddy used emergency cylinder to achieve positive buoyancy but on ascent too much air was vented and they sank once again. Weightbelt was then released. The buddy developed severe headaches and was treated for shock and exhaustion. Subject suffered a leak to the dry suit and was later treated for severe hypothermia. It was later established that the inner bag of the ABLJ was leaking at the emergency cylinder connection. Comprehensive branch report. **B.**

**31/85 March, 1985.** Diver fainted 10 minutes after surfacing from a shallow dive. An overtight dry suit neck seal and possible "sticky" ear was thought to have contributed. Subject rapidly recovered once the dry suit had been removed. **B.**

**38/85 March, 1985.** While adjusting buoyancy with an ABLJ direct feed a diver found that the air supply could not be cut off. Direct feed attachment was disconnected underwater but when excess air was dumped the dump valve blew out of the jacket. Upon inspection the male thread on the dump valve was found to be undersize. **B.**

**51/85 May, 1985.** Experienced diver suffered "reversed ear" due to tight fitting dry suit hood. No pain or discomfort!!! **B.**

**100/85 March, 1985.** Novice on third dive at 12m when he indicated his wish to surface. On the surface he removed his mouthpiece and tried to inflate the CO2 cylinder in his surface lifejacket, which did not work. The buddy inflated his ABLJ and gave support to the novice who was panicking. Mouthpiece recovered by buddy who was left by the novice who swam rapidly to shore. The buddy had to be assisted by the shore cover and was treated for exhaustion. **B.**

**109/85 May, 1985.** Diver in dry suit, unvented, stumbled on rocks while entering the water from the shore. He inverted without regulator in place in 1.5m of water. Managed to right himself by using the ABLJ. Badly wrenched arm. **B.**

**115/85 July, 1985.** Diver was using two separate regulators on a twinset. She was using the other to fill a lifting bag at 36m. When the cylinder being breathed from reached 50 bar, she swapped to the other, to discover water and air being breathed. Shared the buddy's "octopus" rig successfully. Regulator checked and exhaust "mushroom" valve found to have fouled in the exhaust port. **B.**

**116/85 April, 1985.** Diver had severely flooded mask. Eventually, one of the prescription lens in it, fell out underwater. Lenses made by a local optician and as the edges were much thicker than the original ones, were a poor fit. Chambering of the edges added to the problem as they were allowed to turn within the mask seal. **B.**

**120/85.** Diver who complained suddenly of sinus type headaches and coughs sent his regulator for service. Internally it was heavily coated with black powder. Cylinder was also found to be contaminated with the same powder. Upon "rumbling" it was found to contain an egg-cup full of dust. "Illness" traced back to a previous diving trip when it was thought that a compressor charcoal filter "blew" on charging, depositing contents into the cylinder. **B.**

127/85 Aug., 1985. Two novice divers were dropped in moving, rough water by commercial dive school. SMB became wedged in the rocks and in their efforts to free it the divers were separated and in danger of being dashed on the rocks. Dive boat skipper/dive leader failed to quickly respond to the situation, asking them to swim to him against the tidal stream. Divers were eventually picked up down stream. I.

#### EAR PROBLEMS, FALSE ALARMS AND NETS

25/85 Jan., 1985. Trainee in 3m pool suffered tingling in teeth after exercises. Suspected aerodon talgia. B.

36/85 Sept., 1984. Diver experienced problems with ear clearing in an attempt to catch a buddy who was overweight. He experienced a "rushing noise" and giddiness. Diagnosed as middle ear rupture of the "Round Window". Permanent loss of upper frequency hearing. B.

111/85 July, 1985. Diver suffered aural barotrauma after 4 mins on a wreck dive to 20m. B.

119/85 Aug., 1985. Diver suffered perforated eardrum after normal/slow descent on a 20m wreck. Blood noticed only after night dive some 14 hrs after the initial dive, where some pain on surface was evident. Doctor suspects susceptibility to ear problems. B.

33/85 Jan., 1985. Wife of diver phoned police when divers were overdue. Police traced divers' car where they were found safe and well, but trying to regain body heat after their dive. Coastguard report only. U.

64/85 April, 1985. Divers overdue were reported missing. Later found safe and well. Coastguard report only. U.

91/85 June, 1985. Solo diver found floating unconscious by wind surfer. Taken to hospital and later released fully recovered. Coastguard report only. U.

117/85 July, 1985. Diver on wreck at 32m caught by nets when buddy's finning reduced visibility to nil. He waited for vis. to clear and carefully detached the net. Buddy not required to give assistance. B.

138/85 June, 1985. Diver was seen to fire a red flare to attract the attention of his cover boat some quarter of a mile away. Passing helicopter and nearby yacht, went to investigate after the alarm had been raised by a member of the public. Coastguard report only. U.

141/85 July, 1985. Lifeboat launched to help divers who were

reported waving for help by a passer by. Upon investigation it was found that their "OK" signals had been mistaken for distress. Coastguard report only. U.

144/85 July, 1985. Member of the public reported persons "swimming" near a small rowing boat which was low in the water. Found to be divers "testing" equipment. They apologised for not displaying a dive flag or informing anyone of their intentions. Coastguard report only. B.

146/85 July, 1985. Passing vessel went to investigate "abandoned" boat with no sign of life nearby. Boat thought to belong to local "clam" divers who climbed aboard and disappeared before they could be told of their stupidity. Coastguard report only. U.

#### ILLNESS INVOLVED

9/85 Oct., 1984. After second dive of day, to 20m, a diver complained of "aches". He was given aspirin and next day medical help was sought. Diagnosed as severe respiratory infection. No further details. U.

10/85 Nov., 1984. Following a dive to 5m for 20 mins a diver suffered "pins and needles", vomiting, convulsions and a "strained" leg. Thought to be a virus infection. No further details. U.

13/85 Nov., 1984. Trainee suffered convulsions in a swimming pool. Cyanotic when removed from water. Suspected epileptic fit. Comprehensive branch report of incident but no further details of any diagnosis. B.

20/85 Dec., 1984. Diver became unconscious while snorkelling in 3m swimming pool. No further details. B.

43/85 March, 1985. Diver developed "pins and needles" and lower limb paralysis after dives to 7m for 31 mins and 17m for 21 mins. Interval 4 hrs. Diagnosed as viral infection of spine and not decompression sickness. B.

90/85 June, 1985. Diver taken to hospital after surfacing spitting blood. He had done an uncontrolled buoyant ascent from 26m. After X-rays and further tests he was diagnosed as having suffered pulmonary oedema rather than barotrauma. Cause thought to be combination of stress and cold, activating an inherent lung weakness. The subject was wearing a wet suit in very cold water. Evidence of earlier occurrence of similar problem and subject advised not to dive again. B.

#### STATISTICAL SUMMARY OF ACCIDENTS AND INCIDENTS

ITEM	1981	1982	1983	1984	1985
Incidents reported	216	149	142	213	165
Incidents analysed	203	148	142	211	164
British incidents	190	126	126	200	160
Incidents abroad	8	10	9	11	5
Location unknown	5	12	7	10	0
BSAC Members	160	108	112	138	118
Non BSAC Members	9	15	6	15	17
Membership unknown	33	26	24	74	29
Decompression sickness	30	36	38	72	57
Recompressed	23	33	33	67	54
Depth reported	24	24	28	63	45
30m or deeper	19	14	18	45	25
Attempted recompression underwater	3	3	3	5	1
BSAC Members	23	18	22	34	38
Definitely NOT BSAC	2	8	2	3	11

All the above reports are based on information received between November 1st, 1984 and October 21st, 1985.

#### HISTORY OF DIVING FATALITIES

YEAR	MEMBERSHIP	DEATHS	
		BSAC	NON-BSAC
1959	2,615	1	
1962	5,023	1	
1963	5,255	1	
1964	5,571	2	
1965	6,813	3	(0)
1966	7,979	1	(4)
1967	8,350	1	(6)
1968	9,241	2	(1)
1969	11,299	2	(8)
1970	13,721	4	(4)
1971	14,898	0	(4)
1972	17,041	10	(31)
1973	19,332	9	(20)
1974	22,150	3	(11)
1975	23,204	2	
1976	25,310	4	
1977	25,342	3	
1978	27,510	8	(4)
1979	30,579	5	(8)
1980	24,900	6	(7)
1981	27,834	5	(7)
1982	29,590	6	(3)
1983	32,177	7	(2)
1984	32,950	8	(5)
1985	34,861	8	(6)