physician may help clear up the matter. Generally, asthma does not consist of a few illnesses with wheezing early in life, but rather consists of repeated episodes of wheezing throughout childhood or even into adolescence and young adulthood. Where there is a definite, unmistakable history of asthma earlier in life, the question should be considered settled at that point. There is no benefit for someone with a clear-cut history of asthma to consider the idea of attempting to enter the field of commercial diving. An attack of asthma while diving, under hyperbaric conditions, could prove fatal to the diver.

Testing for Latent Asthma

There may be cases where genuine doubt exists as to the correctness of an earlier diagnosis of asthma. For those willing to go to the trouble, there are further tests which can be done and are reasonably specific to this subject. It should be emphasized at this point that anyone who has a history of asthma, even if it is only a suspicion, now bears the burden of proving that he does not have asthma. In the absence of accurate information to the contrary, a history of asthma alone is sufficient to disqualify from diving. First, the person should have a standard pulmonary function test (spirometry) performed. The results of this test should clearly be within the expected range. Following this, the test should be repeated after the person has received a bronchodilator. Comparing the results of the two tests, there should be no significant change on the pulmonary function study obtained after receiving the bronchodilator. While there is a tendency for a person to show slight improvement on repeated tests due to the effect of practice, definite improvement on the second test may be taken as circumstantial evidence that the patient is an asthmatic or has some asthma-like narrowing of the airways in the lung. If this first before-and-after test shows no suggestion of asthma, a second test should be done. This involves the inhalation of methacholine or histamine. These compounds will cause no reaction in ordinary people when given in extremely small dosage. In asthmatics, a definite reaction is usually provoked and a positive result on this test is usually taken as an indication of latent asthma. Both of these tests can be done in any well-equipped pulmonary laboratory. It should be emphasized that, in the case of the second test, the compound must be administered by very finely-calibrated equipment. In addition, the reaction produced can be rather severe and therefore the test should not be done in any laboratory that is not properly equipped. If both of these tests produce no sign that the patient has asthma, it could reasonably be concluded that the earlier history of asthma was probably in error and a future in diving could be contemplated.

While it is certainly true that a person with an incorrect diagnosis of asthma can participate in diving with perfect safety, a person who does have asthma could very possibly have an accident which would result in permanent disability or death. It should be obvious that rigorous, thorough testing in order to resolve the question is of considerable importance.

WHEEZY DIVER

John Betts

Probably the most common problem in my postbag of reference cases is the young asthmatic. No other condition needs such a delicate balance of judgement by the examining doctor or exemplifies so much the differing philosophy of amateur and professional diving.

Asthma is caused by contraction of the smaller bronchioles in the chest, which close down and restrict the flow of air to and from the alveoli, thus causing the characteristic “wheezing” and producing shortness of breath.

In young people it can result from allergies to dust or pollen, from emotion, (particularly if unpleasant), infection or exertion and in many cases from no apparent cause.

The danger while diving is two-fold. Minor crises are inevitable in even the best ordered diving and a panicking asthmatic who develops an attack when difficulties arise may turn a problem into a major crisis.

Secondly the narrowed bronchi will restrict the easy expansion of compressed air in the chest while surfacing from a dive, thus producing lung rupture and cerebral air embolism, particularly if an emergency ascent has to be made.

So we do not accept anyone who has any permanent degree of asthma and, because the drugs used in treatment also affect heart and circulation, anyone who has to take any pills regularly for his asthma. Ideally, the diving asthmatic should have infrequent attacks and not take any regular treatment.

In recent years, however, two new treatments have appeared. One, Intal (sodium cromoglycolate) is a British discovery, an inhaled powder which stops the irritant reacting with the bronchioles.

The other is also inhaled and is a mist of particles of steroids, a drug which switches off the body’s reaction to allergens and when used in this way is not absorbed into the body. The same drug has been used for many years by mouth for asthma but has so many other effects on the body that it rules out diving.

The use of these types of inhalation may produce a completely normal chest while they are taken regularly, thus allowing sufferers to dive with safety.

It is in this area that the differing requirements of amateur and professional diving become evident.

The professionals, needing a man who will be available to dive come hell or high water, ban all asthmatics from diving, while as amateurs we accept someone who may have to opt out of a weekend's diving.

Our more lenient policy has proved itself over the years by the absence of any recorded serious incidents involving asthmatics.

Reprinted, by kind permission of the Editor, from DIVER (April 1982).

THE EARLY DAYS
HOW MARVELLOUS WITH AIR!

Don Linklater

During World War II I was a Company Commander in the Torres Straits Light Infantry Battalion. My men had been pearl shell or trochus divers who made their goggles from carved "kapok tree" with insert of glass. Such goggles did not suit me, so I made my own from an army issue type mirror, the de-silvered glass being fixed into a piece of jeep tube split to form four straps which enclosed my head. A friend whom I had trained to dive used such a mask while diving to remove a net fouling the propeller of a ship taking part in the Labuan offensive. I later copied this mask and produced it commercially in Australia.

My men gave me advice based on their diving experience: "*Now you listen true, Captain. If you in front of a deep reef and put your hand in a cave and that hand taken by conger eel, be calm, put your trust in God. Put you head on your arm and pray for the eel to change his bite. When he moves his mouth, punch your hand deep into him then pull one time with both legs and arms, or you will die!" "If you are swimming and tide coming and miss your boat and friends, look quickly at the highest coral rock on the reef, tie all the strings you can take and make enough to tie to the rock so you can breathe when the sea is deep and hold on."* I knew of Torres Strait Islanders who spent the night on coral niggerheads, rising and treading water to breathe, keeping their position till dawn and the return of the rescue boat from the lugger, simply saying to their rescuers, "I knew you would come back!" They knew the importance of avoiding panic. On one occasion in Fiji I was in a similar situation. The spill of water over the reef as the tide fell was so powerful that I had to dive and hook my speargun spear into the coral, rising on the cord to breathe from time to time and then progressively changing the anchorage of the spear until reaching the safety of shallow water.

During the war I obtained some Japanese diving equipment from an old pearl-shell warehouse, made up the airlines and put together an old air pump of the manual type. The army would not let me have a sensible boat so I had to make do with an old barge. My tenders were ex-divers but could not cope with the change of tide or the violence of the water, the worn-out pump bearings which overheated and seized up and the fact that the pump was not tied down firmly owing to a lack of anchorage points. Once when I was in the Helmet at about 100 feet, the pump slipped and slid, changing the barge's balance. Although the men did everything they could, the pump slipped suddenly across the barge and into the water, and down to join me. They dragged me to the surface by the lifeline, lifting me bodily by the neck like a fish into the barge, bleeding from ears, nose and mouth. I was ticked off by my Battalion Commander for trying to get pearl shell for the nurses at Thursday Island and reminded that I was to kill Japanese, not myself.

During my days in the swamps of New Guinea my men swimming with me in the swamps suddenly left the water. They explained that they had seen a black cod among the roots in the shallow water. I asked why they were worried and they said that because the water was shallow and we were looking into the dark, this cod was known to suddenly rush and bite off the lips of spear-fishermen.

After the war I purchased some oxygen equipment from a member of the Navy. The unit contained damp, old, deteriorated soda-lime and he suggested that I regenerate it by putting it out on the rocks on a hot day. When I used it for a deep dive off Sydney I felt very, very queer. Because of the fatalities the Navy later restricted the use of oxygen sets to no deeper than 25 feet and introduced the use of oxygen-nitrogen mixtures. So we dived with compressed air equipment made up from Air Force oxygen bottles and a modified copy of Cousteau's demand valve, and felt more confidence when at depth.

One chap had a small air compressor under his car to be driven by the moving parts. He drove 30-miles with the compressor gathering in the worst atmosphere possible plus the "cracked" lubricating oil used in the cylinder. He was found dead within minutes of diving. I can still remember some of my doubts about early compressed air. I can taste the weird burned oil. I can see the air bubbles breaking on the surface and literally giving off blue smoke!

Among the most dangerous of the early "aids" was a floating mini-boat carrying an extended snorkel, connected to the diver by a long rubber tube. Nothing dangerous happened if the valve system worked and the user was near the surface, but users often passed out because they attempted to draw air down at depth or because the valve was faulty and they were rebreathing their exhaled air, the inhalation tube being too long for flushing if used during exhalation. Near deaths, but no actual fatalities, were reported to occur.

The early snorkels were definitely dangerous and some fatalities are believed to have resulted from carbon dioxide build-up through failure to adequately