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Good day to everyone. I’m Rick Le Blanc, President of OUC and one of its 3 Board members. Beginning as a “general” board member with the Director of Membership portfolio, I took on the added responsibility of President earlier this year. I’ve been diving for 6 years with SUCI (Scarborough Underwater Club Inc.) and am a certified Divemaster. My all-time favourite dive (so far) is the wreck of the Forest City in Tobermory.

This is my first “President’s Corner” in “Ontario Diver”. Much has transpired in the more than 11 months since our Annual General Meeting and there is much to report. We thank Marlyn Smith of SWODA who took over from Chris Phinney as OUC Director of Sport Safety. David Taylor rounds out OUC’s Board as Director of Finance. There are 2 remaining vacancies on the board. Concerned divers who wish to volunteer for the board may email me at ouc.president@underwatercouncil.com

At the 2011 AGM, there were 42 suggestions brought forth by the members in attendance for 2012. The Board included these suggestions in its 2012 planning session in March, and then assigned volunteer resources in order of greatest priority. We did not have enough volunteers to act on all suggestions. Here are the main points to the 2012 plan:

Membership:
- Reach out to clubs that have not yet joined. Explore inter-club synergies such as training, dive season, club events, etc.
- Develop a compelling Individual Membership Value Proposition through a tendering process addressed to 12+ insurance carriers
- Revamp the Commercial Value Proposition with more up-to-date benefits
- Send out renewal forms to existing commercial members with a newly designed pamphlet
- Send out a mass mailing to potential commercial retailers, travel companies and charter operators

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Sport Safety:
- Continue to publish OUC’s “Ontario Scuba Incident & Prevention report” with the aid of Ayisha Hassanali and Stephen Weir
- Refresh OUC’s Scuba Diver Safety Awareness Program (SDSAP) for Fathom Five
- Maintain the Liability Policy and Risk Management Document for Scuba Clubs
- Place the Aviva Barth Memorial Program on hold until we have the volunteers needed to properly run the program

Communications:
- Maintain a social media presence such as Facebook
- Maintain OUC’s website and look for ways to improve its user friendliness
- Increase our media presence by using free on-line ads
- Publish quarterly issues of OUC’s “Ontario Diver” newsletter
- Implement reciprocal links of websites between OUC and its members
- Continue to vet all communications with all levels of government

To date, we’ve made excellent progress towards executing our plan. We’ve implemented a shared Google club Calendar to communicate information on dives and events. We’ve also established regular club Presidents’ meetings to share opportunities and information amongst clubs. We’re working on putting out OUC’s “Dive Ontario! Guide” to diving Ontario, and a web-site refresh is in the works as well.

I look forward to continuing to represent OUC members and the greater Ontario Scuba Diving Community in 2013 and hope to dive with as many of you as I can!

Thank you,

Rick Le Blanc
President and Membership Director
Ontario Underwater Council

WELCOME!

OUC would like to welcome Great Lakes Technical Divers to the growing ranks of OUC Member Scuba Clubs!
Diving and Immersion Pulmonary Edema
Drowning From the Inside Out
Ayisha Hassanali

Immersion Pulmonary Edema (IPE) is a phenomenon that has been gaining attention recently and is not yet well understood. It has afflicted exceptionally fit military endurance swimmers and triathletes as well as divers who are of average to poor fitness. Hypertension, pre-hypertensive findings, as well as cardiovascular dysfunction, have been associated with IPE. Asthma may also contribute to the development of IPE. While many people survive an episode, it is unknown how many deaths due to IPE are mistakenly attributed to drowning due to their similarities. IPE may therefore be under-reported.

Immersion Pulmonary Edema is an accumulation of fluid in the air spaces of the lungs while in the water. There is a sensation of drowning in your own fluid, shortness of breath, an inability to breathe and hyperventilation. There tends to be a persistent, crackling cough; rattling, noisy breathing; and sometimes clear to pink, frothy sputum coughed up. The symptoms of IPE can be differentiated from Cardiorespiratory Decompression Sickness or the “chokes” in a survivor by an absence of chest pain and the tendency for IPE to begin at shallower depths. A lung overexpansion injury can have similar symptoms, but occurs upon ascending, whereas the onset of IPE occurs before ascending. When a diver ascends, the surface does not necessarily provide relief. If the body lacks sufficient oxygen due to the accumulation of fluid in the air spaces of the lungs, confusion, loss of consciousness and even death can occur.

What should be done in a dive-related emergency?
A diver suffering from the symptoms or signs of IPE or any diving-related illness needs to be administered oxygen continuously as soon as possible preferably with a Continuous Positive Airway Pressure (CPAP) device. Anything restricting breathing should be removed and Emergency Medical Services should be initiated (911 or CB Channel #9; VHF Channel #9 or #16). The Divers Alert Network should be contacted at 919-684-9111 (collect calls accepted) for all diving related accidents and incidents and they will advise as necessary. CritiCall in Ontario can be called at 1-800-668-4357 by physicians or divers regarding SCUBA diving emergencies. The afflicted diver may require diuretics or further treatment, testing and observation at a hospital. Massive pulmonary edema (fluid in the lungs) reduces pulmonary compliance, the interaction between the heart, lungs, and blood circulation system. Pulmonary edema leads to acidosis, which is acidity of the blood, as well as hypoxemia, a decreased partial pressure of oxygen in the blood. Blood testing may show acidosis and hypoxemia. Pulmonary edema can be seen on a chest x-ray.

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What may be contributing factors to IPE?

The exact mechanism for IPE is not yet known, but it is believed to be a combination of factors compromising the integrity of the blood circulation system. There are several theories about what creates the conditions for IPE to happen. Being immersed in water, even if not fully, causes blood to shift from the extremities to the torso. This central shift of blood increases the amount of blood entering the left side of the heart from the lungs. Usually the heart and lungs compensate for such a volume shift, but sometimes it overwhelms the circulation process. Fluid then leaks into the lungs.

Although IPE has occurred in warm water, it usually occurs in cold water, considered to be less than 25C/77F. Cold water, particularly for an extended time, as well as the high density of water, aid in the central pooling of blood and cause the constriction of small arteries. This constriction increases resistance to the flow of blood, which can cause the fluid to leak from the pulmonary capillaries to the alveoli, which are the airspaces of the lungs. People with hypertension, or who are pre-hypertensive, may have an elevated vasoconstrictive response to cold, making them more susceptible to IPE.

Another theory in the development of IPE is that forceful inhalation or acute airway obstruction may cause the capillaries to leak fluid into the alveoli resulting in IPE. This type of strong inhalation may be in response to overexertion, over-breathing a regulator or snorkel, or a poorly tuned or maintained regulator, increasing the work of breathing. Strenuous exertion before, during, or after diving can contribute to the incidence of IPE. Being drastically over-weighted, diagonal trim in the water and quickly finning or sculling increases the work of breathing. Being underweighted and kicking hard in a head-down position to descend increases the work of breathing. Other factors could be low tank pressure with an unbalanced regulator, a tank that is not completely turned on, respiratory irritants in the compressed gas or exposure to cigarette smoke. A tank valve failure, although rare, can also increase breathing resistance. Aspiration of water can cause an airway obstruction and resistance conducive to IPE but victims sometimes aspirate water as they reach the surface gasping for air rather than precipitating the incident. Panic can also increase the effort of breathing. Wearing an overly tight wetsuit can constrict the chest and decrease the lung volume. This chest constriction reduces the intrathoracic pressure and increases the resistance to breathing. Breath-hold diving can result in bilateral pulmonary vascular injury and intra-alveolar hemorrhaging, possibly increasing susceptibility to IPE. Any activity or material that increases the work of breathing can contribute to the pulmonary leakage of fluid into the lungs, so should be avoided.

The position of a diver in the water can contribute to the development of IPE. When a diver maintains horizontal trim in the water, the regulator delivers gas to the mouth at about the same hydrostatic pressure as the centre of the lungs. When a diver is upright or diagonal in the water, there is a pressure differential between the mouth and

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Reduce Your Risk of Immersion Pulmonary Edema:

- Maintain a nutritious, well balanced diet
- Engage in an active lifestyle and moderate exercise every day or at least several times per week
- Ensure blood pressure is not above 120/70, a new benchmark
- Avoid smoking
- Keep regulators well maintained and tuned
- Avoid increasing resistance on user-adjustable regulators
- Avoid over-breathing or overexerting
- Strive for neutral buoyancy and avoid overweighting
- Maintain tanks with current visual inspection and current hydro testing
- Maintain proper but not excessive hydration levels
- Discuss the use of beta-blockers and other medications with a doctor prior to diving
- Ensure that exposure protection is not overly tight
- Maintain horizontal trim while diving for minimal water resistance
- If using a rebreather, consider the placement of the counterlung and maintain trim
- If using a rebreather, consider using a manual diluent valve
- If a diver is feeling unwell before a dive, the dive should be aborted
- If a diver has sudden shortness of breath, persistent coughing or difficulty breathing, the dive should be aborted immediately and safely and 100% O2 breathed on the surface
- Take your time, relax and have fun!

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lung centroid, creating a negative pressure. In a severely head-down position (more than 40%), the regulator delivers the gas at the hydrostatic pressure of the mouth, rather than the centre of the lungs, creating a positive pressure. This pressure difference can cause decreased lung compliance and increased pulmonary capillary pressure, potentially resulting in fluid leaking into the alveoli.

Rebreathers can elevate the risk of developing IPE due to the typically increased work of breathing in addition to the negative pressure caused by the placement of the counterlung and the functionality of an Automatic Diluent Valve. Back-mounted counterlungs increase the pressure differential since the counterlung is at a lower hydrostatic pressure than the lung centroid which causes the pulmonary capillary pressure to increase. If an automatic diluent valve has insufficient flow, the work of breathing increases. The hydrostatic pressure changes on a rebreather user can be greatly affected by the design of the rebreather, the placement and stability of the counterlung and the diver’s trim. All of these factors can increase the preload on the left side of the heart, causing pulmonary fluid to leak into the alveoli.

IPE has been associated with over-hydration, especially prior to high-exertion swimming. Divers are advised to be properly hydrated but not over-hydrated and to not exert themselves. There are interactions between the lung and stomach contents that can induce pressure to vary, affecting the circulation process.

Medications are being examined for their potential role in some incidents of IPE, such as those for Erectile Dysfunction and thyroid regulation, which may increase hypertension or blood pressure.

What if a diver has experienced IPE before?

The risk of reoccurrence of IPE is not known. Someone who has experienced IPE should consult a doctor familiar with the condition prior to diving again. The physician may evaluate the risks for a particular patient based on their medical history and the potential triggers to be avoided. The doctor may advise lifestyle changes in the area of diet and fitness to lower blood pressure and improve cardiovascular function. Some doctors advise patients with hypertension to take anti-hypertensive medication prior to diving. The physician may order tests to evaluate if there are heart valve or heart muscle abnormalities or blocked arteries. Divers who have been afflicted with IPE may be advised to avoid particularly cold, deep or aggressive dive profiles. A drysuit may be recommended for engaging in cold water diving. A diver who has experienced IPE or exhibits the risk factors associated with IPE should assess the potential risks and if possible, consider ways to reduce the risk in consultation with a knowledgeable doctor.

Did You Know?

The Alice G sunk on December 8th, 1927. Likely the most-dived of the 5 ‘Tugs’ in Fathom Five National Park in Tobermory, it has shore access and, at a depth of only 23’, is shallow enough for divers of all skill levels to enjoy.

Why not visit a couple of the other tugs at the same time?

Photo © ScubaQ
OUC is now accepting nominations for the following 4 (out of a total of 5) Board of Directors positions:

1. Director of Sport Safety (2 year term) - Mar Smith is standing for re-election
   ouc.safety@underwatercouncil.com
2. Director of Membership (2 year term)
   ouc.membership@underwatercouncil.com
3. Director of Communications (2 year term)
   ouc.communications@underwatercouncil.com
4. Director of Finance (2 year term) - David Taylor is standing for re-election
   ouc.finance@underwatercouncil.com

All positions listed above will become vacant at the 2012 AGM on Sunday, November 25th. Anyone who is a member of the greater Ontario scuba community (diver, professional, club, retailer, charter operator, etc.) and who is capable, committed, and motivated about serving the sport is eligible to be nominated. The nomination form and instructions may be found on OUC’s website www.underwatercouncil.com on the Volunteering Opportunities page http://underwatercouncil.com/?action=cms&cmspage=careers

If you are interested in serving on the OUC Board in one of these capacities, and would like to know more about the role and its responsibilities, please visit our website at www.underwatercouncil.com and look in the Volunteering section, or contact the existing Board Members directly via the e-mail addresses provided. Naturally the outgoing members are all fully committed to helping the incoming members take on

Interested in giving back to the sport?

Q: Who can be a Director of the OUC?
A: Anyone who wishes to help support Scuba Diving in Ontario!

Q: What do I need to be on the Board?
A: You need to be/become a member of the OUC.
A: You need to be nominated.

Q: How can I be nominated?
A: You can approach an OUC club member and be put forward by the club’s executive.
A: You can approach a current Director of the OUC and be nominated.

Q: When are the elections?
A: Elections are held every fall at the AGM (Annual General Meeting).

Q: How else can I help if I don’t want to be a Director?
A: There are numerous areas where OUC can use your help and enthusiasm, such as with committees, events, and portfolios. To learn more about volunteer opportunities in OUC, please visit: www.underwatercouncil.com/?action=cms&cmspage=careers
The Royal Canadian Mint announced today that it is expanding its waterproof currency program to include the $50 bill, followed by the $20, $10, and $5 bills.

The currency, designed specifically to meet the needs of Canada’s many scuba divers, was first announced last June. In November, the first denomination of waterproof currency to be released into circulation was the $100 bill.

Mint officials say the new bills are made out of a plastic polymer that will make it easier to conduct financial transactions underwater, harder to counterfeit, and easier to launder. Canadian scuba community leaders interviewed by Ontario Diver said the waterproof currency was long overdue and should give a badly-needed boost to both the underwater and underground economies.

In early 2011, Ontario Diver staff volunteered (at great personal sacrifice) to help the Mint test the new bills before they went into circulation.

At the time, the Mint had no in-house divers of their own to conduct such testing, so they jumped at Ontario Diver’s offer and sent us a suitcase-full of the $100 denomination bills. We have so far tested and tendered the bills at depths of 10m, 20m, 30m, and 40m in both fresh and salt Canadian waters. Because we still have more than ¾ of the bills left, we will continue our testing in more rigorous diving locales such as the Red Sea, Indonesia, Australia, and the Philippines, and so on, until all the bills are gone.

Preliminary test results show that other than a tendency to stick together when wet, the bills perform extremely well. Indeed, they are now estimated to last more than twice as long as paper bills which should save the Royal Canadian Mint an estimated $200M over the life of the series. A proposal to pour these monies back into the Canadian scuba diving community is currently being drafted for publication April 1st of 2013.

In other related news, the Mint announced its plans to test-trial a combination money-belt-weight-system for more discerning divers later this year.

Designed to accommodate both BCD-integrated-weight systems as well as belt-weight systems, the solid gold scuba weights will be offered initially in 1.5Kg (~48 Troy ounces) denominations.

A Mint spokesperson acknowledged that divers will only be able to carry a paltry ~$0.5M in an 11Kg / 24lb weight system, but was optimistic that the following other benefits will convince divers to switch to gold:

- Gold (unlike lead) is non-toxic and safe to handle with bare hands
- Gold (unlike lead) does not oxidize over time
- Gold has a significantly greater density than lead (19.3 grams per cubic centimetre for gold compared 11.34 grams per cubic centimetre for lead) so a gold weight system will take up significantly less room in the back of your Ferrari Enzo.

Should the above plans come to fruition, then Ontario Diver predicts a resurgence in the popularity of scrounge diving.

If you are interested in volunteering to help OUC or Ontario Diver team test-trial the solid gold weight system, or are interested in volunteering for OUC’s many other programs, then please don’t hesitate to contact OUC President Rick Le Blanc at ouc.president@underwatercouncil.com.

Thank-you!
Carbon Monoxide is a colourless, tasteless, and odourless gas. Chemically speaking, Carbon Monoxide (Symbol “CO”) is a molecule consisting of one atom of Carbon bonded to one atom of Oxygen.

Carbon Monoxide Poisoning is what occurs when Carbon Monoxide is inhaled and absorbed by the body. Not all the mechanisms of Carbon Monoxide poisoning are known, but one of the most significant occurs when Carbon Monoxide is taken up by the body’s hemoglobin. Normally hemoglobin serves as the body’s “Oxygen Transport” system, however hemoglobin has a ~230 times greater affinity for Carbon Monoxide (CO) than it does for Oxygen (O2), so once hemoglobin has taken up a Carbon Monoxide molecule, it transforms into carboxyhemoglobin and can no longer deliver life-sustaining oxygen to the body. As increasing amounts of CO are inhaled and absorbed, the signs and symptoms of carbon monoxide poisoning increase and may eventually result in death.

Carbon Monoxide can get into your body either by inhaling it from ambient air (e.g. in a garage with all doors closed and a running car engine), or by inhaling it from your compressed breathing air supply. Two primary ways that Carbon Monoxide can get into your compressed breathing air supply are:
- Carbon Monoxide can be drawn into the air intake of the compressor from the outside. This could happen if the opening of the compressor air intake is too close to a source of CO, such as a chimney, a furnace, or internal combustion engine exhaust/s. Even though the density of CO is fractionally less than that of air, in heavy vehicular traffic areas and corridors there is an increased concentration of ground-level CO. If compressed breathing air intakes in these areas are not located high enough above ground level, then CO can be drawn into the compressor air intake, and then introduced into your tank during filling.
- Carbon Monoxide can also be created inside the compressor if it is running too hot, or if the lubricating oil used does not meet compressor manufacturer’s specifications. In these instances, the oil lubricating the compressor can begin to (incompletely) combust inside the compressor. This is sometimes referred to as “dieseling” and can not only cause CO to be created inside the compressor, but can also cause extensive damage to the compressor.

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5 How much CO is OK and how much will it take to hurt me?

The Canadian Standards Association CAN-CSA-Z180.1-00 (R2005) for Compressed Breathing Air states in Section 15.3.3 that “The carbon monoxide concentration shall not exceed 5 parts per million (ppm)”, so one could assume that anything less than that is acceptable. OUC has heard that new standards being developed for Compressed Breathing Air for Divers may reduce the acceptable CO level to 3 ppm.

400 ppm of CO breathed at the surface for about an hour could give you a bad, persistent, frontal headache.

13,000 ppm CO breathed at the surface can kill you in about 3 minutes.

A VERY important thing to keep in mind however, when talking scuba diving and gases, is that the effects of a given gas (nitrogen, oxygen, carbon monoxide, carbon dioxide, etc.) in a mixture of gases do not vary directly by parts per million, but rather by the partial pressure of that gas.

What this means to divers is that a given level of Carbon Monoxide in your tank when breathed at the surface might not hurt you, but when breathed at depth could kill you.

6 Can’t CO just be filtered out of the air, either before it goes into the compressor, or after it comes out of the compressor?

No. Gaseous carbon monoxide molecules and gaseous oxygen (\(\text{OO} / \text{O}_2\)) molecules are too similar to allow for any simple mechanical filtering out of CO.

Fortunately, however, even though CO cannot be mechanically filtered out, it can be chemically converted into a less dangerous gas through various catalytic processes, either before it enters the compressor or after it leaves.

One such process used extensively in the production of compressed breathing air for divers utilizes “Hopcalite”, a compound made up of copper and manganese oxides.

Hopcalite, in the presence of oxygen, converts (catalyzes) deadly CO into much less harmful carbon dioxide (\(\text{COO} / \text{CO}_2\)).

Hopcalite can only do its job if it is kept dry, however. So, great care must be taken to always separate / drain out any liquid water condensates in the system beforehand.

Driving Divers may be interested to note that CO production in internal combustion engines is also a concern in the automotive world. To address this concern, automotive engineers designed catalytic converters utilizing the metal platinum as a catalyst to convert CO into \(\text{CO}_2\) in the exhaust flow.

7 How do you treat a scuba diving victim of suspected or actual CO poisoning?

Do not put yourself at risk.
Remove the victim (and yourself, if applicable!) from the suspected source of CO
Administer 100% oxygen as quickly as possible
Activate EMS
Get the victim to proper medical care as quickly as possible

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Is the production of compressed breathing air regulated in Ontario?

If the compressed breathing air producer is providing air to people who are defined as “workers” under Ontario Labour Legislation, then regulation applies. If the compressed breathing air producer is providing air to people who are not defined as “workers” under Ontario Labour Legislation then regulation does not apply.

“Workers” are defined as anyone who earns all or part of their income while breathing compressed air. In the distant past, this used to mean just commercial divers and firefighters, but it seems now as if the definition is being broadened to include recreational scuba professionals such as Divemasters and Instructors. As a result, virtually every compressed breathing air station in Ontario is now regulated by the Ontario Ministry of Labour, and must meet CSA compressed breathing air standards, including having their air tested by an accredited laboratory every 6 months, or after every major air compressor system overhaul.

In the recent past, the Ontario Ministry of Labour began requiring that compressed breathing air station operators in Ontario install in-line CO detectors with automatic shut-off of the compressor if the allowable CO limit is exceeded. It is not known yet how far this program has reached.

It is important to note that these same regulatory measures may not exist outside of Ontario.

How can I test to see if there is CO in my scuba tank?

There are several methods of identifying if there is CO in your scuba tank. The easiest, quickest, and least expensive way is to perform the sniff test on your air supply before every dive. Even though pure Carbon Monoxide itself is odourless, tasteless, and colourless, you should be able to easily pick up the accompanying smells of exhaust, smoke, oil, etc. Should the air in your tank smell or taste like any of these, assume that it also has unacceptable levels of CO in it and DO NOT USE IT.

Alternatively, if you want to know the level of CO in your tank more precisely, then there are numerous portable CO detectors and analyzers that you can buy on the open market.

Initial signs & symptoms are:
- Headache (most prevalent), sometimes described as “dull”, “frontal”, “persistent”
- Nausea
- Malaise
- Fatigue

Progressive signs & symptoms are:
- Rapid heart rate
- Low blood pressure
- Irregular heartbeat
- Delirium
- Dizziness
- Unsteady gait
- Confusion
- Seizures
- Central nervous system depression
- Difficulty breathing
- Chest pain
- Unconsciousness
- Respiratory arrest

Note: Those of you with sharp eyes may note the absence of “cherry red lips” as either a sign or a symptom of CO poisoning. In researching this article, several sources mentioned that “cherry-red lips” were only noticed in victims after they were already dead and thus should not be included in the list of signs or symptoms.

What are the signs (that an observer would notice) and symptoms (that a victim could report) of CO?
This past August I had the privilege and pleasure of joining an underwater archaeological expedition to the Dominican Republic for the first of their four planned weeks. The expedition was organized and led by Dr. Simon Spooner of ADMAT. Rounding out our team were May Loo, Peter Heyes, Wesley Korpela, Jonathan Fook, Beau Sutherland, and Rami Rodriguez our local Dive Master.

One of the key goals of our expedition was to complete an initial survey of a suspected shipwreck site in the Cayos Siete Hermanos (Seven Brothers Islands) which are located about 10km offshore, west of the historic town of Monte Cristi.

Every day that conditions permitted, we would wake early, breakfast, load all our equipment into our van, drive to the dock, transfer everything including ourselves into our boat, and then make the hour-long trip to the site.

Once on-site, Simon and Rami would don snorkel gear and look for the pile of cannon they had seen the previous year. As soon as they had relocated it, we would anchor next to it, slip on our scuba gear, and back-roll into the warm (86 degree F.), clear water (80+ visibility).

Our plan was to fan out along the bottom, locate and tag as many artifacts as possible and then measure and record data including images, GPS coordinates dimensions, depth, and orientation.

We only had a narrow window of opportunity to do all this as every day around noon the winds and waves would pick up rapidly. When that happened, the Captain would give the recall signal, and we would stop whatever it was we were doing, get out of the water as quickly as possible and high-tail it back to the mainland before conditions got too bad.

The artifacts we found during the week I was there included:
- 3 large main anchors (~6M in length by ~3M in width)
- 1 kedge anchor
- numerous cannons of various sizes and bores
- numerous (50+) dressed pre-cut granite blocks (averaging 200 kg, 80 cm in length, 40 cm in width, and 25 cm in height)
- ballast stone (round river rocks of various sizes)

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Based on these initial findings, Simon ventured an educated guess* that The Island Wreck a) was likely a French Merchantman b) was likely built in the late 1600’s and c) probably sank sometime between 1719 and 1724.  

(*Simon’s guess originated from prior archival research ADMAT conducted into The Tile Wreck, an armed French merchantmen carrying a cargo of pre-cut granite blocks for the building of the fortifications of Cape Français and other forts including Port-Au-Prince. The initial hypothesis was that The Island Wreck was also carrying pre-cut granite blocks for the same fortification project.)

After unloading, rinsing, and hanging up all our gear to dry, and volunteering someone for compressor-duty, we would input the data we collected into Site Recorder, a software application developed expressly for underwater archaeology purposes.

It was during one of these seemingly-mundane data-inputting sessions at the kitchen table that I had an experience I will never forget...as we plugged in the data into the application, a distinct pattern began to emerge....in pretty much a straight line running from north to south and starting from deepest water to shallowest water...first came the cannon...then the anchors...then the granite blocks...and lastly the ballast stones.

And in the exact same instant that I saw the pattern, I was transported back three centuries in time...

Nous quitté la France il ya quelques mois... <Editor’s note: beyond this point, 18th century French has been translated into 21st century English on a best-effort basis> ... with a cargo of goods destined for the New World, including, by the decree of His Majesty King Louis XIV, a shipment of cannon and granite blocks to strengthen the fortifications in Port-Au-Prince on the French-owned Santo Domingo (present-day Dominican Republic) and Hispaniola (present-day Haiti).

Our westward journey had been largely uneventful, but now it was early evening on Mercredi, le 21 Août, in the year of our good lord 1720. Not long after our look-out spied land, the skies turned dark and the seas grew ugly.

The wind which had been blowing steadily out of the north-east in the morning, and which had swung to the north in the afternoon was now blowing hard out of the north-west, meaning we would have to tack if we were to make further progress westward.

Capitaine Cuillèrer cursed “It’s getting dark. We have no choice. We must set course for the port of Monte Cristi.” Overshadowed by a mountain of the same name (both named by Columbus himself in the year 1493), the port was still several hours of rough and treacherous sailing away.

My fellow crew-members (affectionately nick-named “Jean-Fou”, “Pierre-Foins”, “Mais-Oui”, “Beau-Terres-Sud” and “Prairie-de-L’Ouest”) and I knew very well that August was the peak of “le passage de l’ouragan” (hurricane season), and that we’d have to not only weather the storm, but also steer well clear of Les Îles de Sept Frères before making safe landfall in the protected harbour of Monte Cristi.

I had been standing watch since before dawn and, when Beau tapped my shoulder to signal that he was taking over from me, I took a moment to eat and drink sparingly from the last of our rapidly-dwindling food and water supplies and then collapsed into the still-warm hammock. I was asleep before my head hit my rolled-up-coat pillow.
The next thing I remember was being jolted awake by a crunching sound so loud that I felt it in my chest, followed immediately by a complete and grinding stop. Any hope I had that we made only passing contact with an uncharted outcropping was quickly dashed when the shuddering and crunching below decks resumed with increased intensity. I had fallen asleep to awaken to every sailor’s worst nightmare: we were run hard aground at night in the middle of a raging storm!

I rolled out of my still-wildly-swinging hammock and staggered down the hallway and up the ladder more by feel than by sight. Above-decks, a horrible scene, illuminated by the flickering of the ships’ lanterns, greeted me. Four-metre-high breakers were crashing into our starboard side and heaving right up and over our rails. Even things that were lashed and nailed down were being ripped away by the repeated surges.

Above the shrieking of the wind, the crashing of the waves and the crunching and grinding below-decks, I could barely hear Capitaine Cuillèrer shouting at the top of his lungs. “Man the long-boat and deploy the kedge anchor!”.

We lowered the long-boat down on the port side, as this was the lee side. Due to the boat’s list, we only had to lower it a few metres before it touched the water’s roiling surface. Next we lowered the kedge anchor onto planks in the stern of the long-boat so that we could lever it overboard with relative ease once we were in position.

Ten of us then boarded the long-boat and rowed as if our lives depended on it (which they did) with the kedge anchor hawser paying out of the ship behind us. As soon as we passed the bow of our ship, the full fury of the storm and the waves hit us. It seemed as if for every four oar-strokes forward, the wind and waves blew us three strokes backward.

Finally, after more than an hour of hard rowing into the wind and waves, we reached the end of the 200 metre hawser and heaved the kedge anchor overboard. With the wind and waves at our backs and the kedge hawser to guide us, our return journey took less than a minute.

Our ship had suffered greatly in that short time. The list had increased to close to 45 degrees and the port-side railings were awash. Both fore and aft masts had snapped and had been cut loose by the crew, and only the main-mast remained. Who knew for how much longer?

Some of the crew had fed the loose end of the kedge anchor hawser through the starboard side hawse-pipe and had put the three needed turns around the capstan. Eight sailors were trying to push the four capstan bars around clockwise but the extreme slope of the deck made the going very hard.

Capitaine Cuillère next commanded us to “Alléger le navire!” (Lighten the ship!) and we took to the order as if possessed. First to go were the cannon on our gun deck, followed by the ones in the hold. A dozen or so we winched up one at a time and then just swung them over the side and let them go.

At the same time, five of the crew fell to the Herculean task of cutting loose and pushing our main anchors overboard. The rest of us (me included) began the task of jettisoning all the heaviest cargo. Below decks was a living, watery, hell. At a 45 degree list, everything that could shift to port had shifted and anything that could float was bobbing around in the chest-deep water.

We worked like madmen and finally, when we thought we would drop from exhaustion, the next wave smashed into us and, as it receded, our ship gave a lurch to starboard and righted herself by a few degrees! Encouraged by this progress we bent again to our tasks with renewed fervour.

The hardest of all were the heavy granite blocks. With no hand-holds, we had no choice but to pry them up with iron bars and then pass slings under them so that we could winch them up and dump them overboard. Pierre was badly injured trying to lift a block so I bandaged him as best I could and went back to work.

Four more sailors joined the eight already working the capstan, and our bow began to slowly, almost imperceptibly, inch into the wind and the waves. Capitaine Cuillère shouted for eight of us to man the ship’s four pumps and for our ship’s “charpentiers” to go below decks and see what they could do to temporarily repair the damage to our hull. Topside, the four pumping crews pumped frantically.

...continued
With each up-stroke and each down-stroke gallons gushed overboard. With each loud “clack” of the capstan’s ratchets, we headed a little more into the wind, and a little closer to an upright position. With each pounding of the ship’s carpenter’s mallets, the flood of incoming water was slightly stemmed. With each cannon, anchor, granite block, and bit of cargo jettisoned, our hull grew a little lighter.

Just as we allowed ourselves to think that we might free ourselves from this cursed reef, the main-mast, which had previously been badly damaged and was now almost upright in the full force of the wind, snapped, crashing down on top of the aft deck on the port side, crushing two of our four pumping crews and ripping out dozens of supports in the process.

Two mainmast lines attached near the bow snapped with a high-pitched “twang”, instantly killing three of the crew manning the capstan and the sailor belaying the kedge anchor hawser. With no-one maintaining tension on the kedge-anchor hawser, all our hard-won gains were quickly lost.

Then as we fetched up broadside on the reef again, as if to add ultimate insult to ultimate injury, a monstrous wave completely swept over the entire ship, scouring everybody and everything clean off, so that when the wave receded, no-one living or dead was left aboard...

...Trois siècles plus tard...

...I open my bleary eyes to look for my crew-mates and am blinded not by sunlight but by the light from a laptop screen...

...I raise my hand to wipe the sand off my cheek from the beach I washed up on, but feel instead the indentations of a keyboard....

...And, as I listen for cries of “Au Secour!”, I hear only the sounds of people in deepest sleep in the rooms to either side of the kitchen...

Je reviendrai!

<Editor’s note: ADMAT’s August 2012 expedition to The Island Wreck was cut short by the advent of hurricane Isaac that this time swept past Haiti. If you would like to find out more about joining the 2013 expedition, please email ouc.advisor@underwatercouncil.com >

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**UPCOMING EVENTS**

OUC congratulates one of the country’s oldest scuba clubs - Hart House Underwater Club. HHUC, located on the campus of the University of Toronto, will be celebrating their 50th anniversary on November 10th. The event will take place in the Great Hall - Hart House. HHUC will kick off the celebration with a Champagne reception at 6pm followed by a Gala Dinner, dancing and door prizes. Representing OUC will be Raimund Krob, OUC advisor and past President.

OUC’s Annual General meeting will be held on November 25th. Registration begins at 12pm. Please refer to the front page of [www.underwatercouncil.com](http://www.underwatercouncil.com) for further details.

On January 26th and 27th, 2013 the Ultimate Travel Show will host Canadian Provinces, companies, travel destinations, the OUC and Scuba Demo Tank. The event will take place at Exhibition Place, Direct Energy Center. If you are an OUC member and wish to use the Scuba Demo Tank to promote your club or company, please email ouc.central-east@underwatercouncil.com or ouc.president@underwatercouncil.com.

On February 22nd – 24th, 2013 the Outdoor Adventure Show will host several hundred companies and organizations specializing in outdoor activities. OUC and Scuba Demo Tank will be on display. The event will take place at The International Centre on Airport Road, Toronto. If you are an OUC member and wish to use the Scuba Demo Tank to promote your club or company, please email ouc.central-east@underwatercouncil.com or ouc.president@underwatercouncil.com.

The 50th annual Ice Floe Race will take place on March 3rd, 2013. This year’s race will be comprised of a maximum of 20 teams. There will be several grand prizes sponsored by Blackbeard’s Cruises, Ocean Quest, Ikelite, JW Fisher Mfg., Aqua Lung and Diver Training magazine. OUC will host a dinner/banquet on Sunday from 4:30 – 8:00pm with approximately 500 volunteers, participants, family, friends, beneficiary and sponsors in attendance.
Thanks for supporting The Ontario Underwater Council!

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OnThe Lighter Side

A diver was shipwrecked up onto a lonely and tropical shore. As he stood up he noticed his hands were purple, he looked at his feet and they were purple, worriedly he unzipped his wetsuit and his chest and stomach were purple. With his head in his hands he cried, "Oh my God!, I’ve been marooned!"

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