

HARVEYSLAKE.ORG

Report of Study and Findings of Thirty-Six Drownings in Harvey's Lake and Susquehanna River

By Benjamin S. Davis, M.D. (1893-1948)

March 30, 1946

From my experiences with drowning cases at Harvey's Lake and in the Susquehanna River in the vicinity of Plymouth, Pennsylvania, certain conclusions can be deducted that will be helpful to others. These two bodies of water, namely – Harvey's Lake covers an area of 651 acres and is fed by underground springs with depths ranging up to 126 feet* - the [Susquehanna River] has a surface flow of 4 to 10 miles per hour and faster in times of a flood. The depth of the river varies from shore-line to 15 feet a places. During flood season it may reach a depth of 18 to 32 feet with a surface flow of as much as 15 miles an hour.

I have attended thirty-six drowning and five resuscitations in the past twenty-five years. Records compiled from the Wilkes-Barre Record Almanacs and newspaper reports show that in Luzerne County since the year 1885 to and including 1945 there has been 657 deaths due to drowning in the river and various lakes. Harvey's Lake accounts for 48 cases. This type of case is always attended by many people who advance many views on what should be done, how to recover the body, when the body will come to the surface, where the body will be found, how to proceed with resuscitation if the body is recovered in time, and when the person



Dr. Benjamin S. Davis was born in Plymouth, PA, in 1893. He attended Plymouth High School, Pennsylvania State College, and received his medical degree from Jefferson Medical College, Philadelphia, in 1917. He practiced medicine in Plymouth and was an active and generous contributor in his home town as Plymouth's health officer and medical advisor to the Plymouth High School football team. He died in October 1948.

should be declared dead.

Most drownings are accidental such as swimming in dangerous places, unable to swim, improper handling of a boat or float, falling from piers, alcoholism, children getting away from those appointed to watch them, and over-exertion.

The danger spots at Harvey's Lake are marked with floating buoys but these are removed or destroyed. Why persons insist on doing this I do not know. The Harvey's Lake Protective Association has maintained a trained squad in First Aid and rescue work headed by Chief of Police Swanson [Fred] and is fully equipped with floating rafts, electric power, deep water lights, ropes, grappling hooks, boats, pulmotors, electric telescope and medicines. The Chief is available all the year round at police headquarters.

Five stretchers are placed about the lake where station wagons are available maintaining immediate ambulance service. On receiving a report of a drowning the police, physicians and trained men proceed to the area of report.

The Plymouth Police also are equipped with all needed material and are under the leadership of Chief Kendig. They have been trained in rescue and first aid work and maintain an up to date ambulance equipped with the latest resuscitator and two pulmotors.

It is necessary to understand what takes place when a person drowns in order to give the best assistance and help to the unfortunate. As soon as a person falls into the water, he or she realizes the danger and becomes frightened. Instead of remaining calm and saving his energy he attempts by muscular efforts to keep above the

water. As he struggles he sinks down in the water. The mouth becomes full of water; some may be swallowed and enter the stomach. The water in the throat, acting as a foreign body, causes a violent spasm of the throat and chest muscles and a large amount of thick mucous forms immediately which fills up the throat spaces shutting off whatever air that may enter the lungs. This violent shock is followed by a reflex cough and suspension of respiration causing the face and neck to become blue. The person becomes unconscious and death soon follows from suffocation and asphyxia.

It is a fallacy that a person must come to the surface three times before he goes down. He may disappear immediately. The human body is slightly heavier than the water it displaces. On becoming unconscious the body sinks immediately and goes straight down to the bottom unless caught by an obstacle or up-current. As a body sinks it becomes less buoyant due to the increased pressure of the water compressing the air cells in the tissues.

On receiving the report of a drowning the first thing to do on arriving at the scene is to ascertain the spot of the accident. A boat or raft may be floating at the spot. Divers immediately go down trying to locate the body. We have been successful many times in water up to twenty feet. If no boat or raft is present ascertain from someone who saw the accident the exact location and mark it with the distant shore line or some permanent structure and place a marked buoy over the spot.

The area is now worked over with grappling hooks following a pattern as if plowing a field. Most bodies are found

with this method. Hooks will stir up the mud causing the water to become very muddy and, after repeated attempts to recover the body have been unsuccessful, we have discontinued operations until the evening when the water has become clear. Electric lights are then dropped into the water and on several occasions the lights located the body immediately in 30 to 40 feet of water. Divers equipped with diving apparatus have been used in four cases and were successful in two. The other two cases were later found with hooks. We have recovered all bodies in Harvey's Lake in the past 25 years and all but three in the river; one of these was recovered further down stream. The lake being clear and the river very muddy makes a big difference in rescue work. Dynamite has been used in the river with good results. This was set off by trained men using delayed fuse or battery.

When a body sinks it goes straight down to the bottom and will rise again within a few hundred feet of the same spot. The time depends upon the following: season of the year, temperature of the water, physical condition of the body, amount of injury to the body and depth of the water. Decay and putrefaction set in depending on the foregoing. Gas forming in the body causes the tissues to swell and the body holding retained gas becomes more buoyant and rises to the surface. In warm weather this has happened in 24 hours. I have seen bodies, on reaching the surface, shoot out of the water for two feet and immediately float. In the lake the body remains stationary but in the river the current starts taking it down stream. If a body rises at night in the river and is not seen it will be carried down stream

many miles. In my opinion all bodies in the river come to the surface within two hundred feet of the accident. Unless caught by some obstacle, they are carried down stream as much as a hundred miles.

I have noticed a remarkable difference in bodies of persons drowned at the same time and recovered about the same time. Decay has been further advanced in some and others have gruesome appearances. We have recovered bodies at Harvey's Lake in 75 feet of water that showed no signs of decay. Several years ago I placed a thermometer on the suit of a diver working in 75 feet of water and the temperature registered 40 degrees at this depth. This body was recovered and after six days at this depth showed no signs of decay; in fact the autopsy was delayed for twenty-four hours before the proper temperature was secured for autopsy. Many bodies recovered after two days showed signs of mutilation of the face and extremities caused by fish, turtles and crabs.

After a body comes to the surface, especially in the river, decay proceeds rapidly; gas forming in the cavities caused them to burst and the body becomes less buoyant and sinks to the bottom again to be covered by debris, or the tissues are further acted upon leaving a frame. The bodies when swollen become a gruesome sight. Friends and relatives are unable to recognize them. This must be done by means of clothes, tattoos, belt buckles, jewelry, finger prints, deformities, shoes, scars, teeth and measurements. If not found after a period of about a year and the flesh has been eaten away leaving only a skeleton it may be hard to identify the

remains. Previous fractures, amputations of parts, teeth, height, size of bones, remains of a shoe or belt may be the only means.

A drowned person shows characteristics when found in water after a few hours or days: a white frothy mucous from the mouth and nose (if the mucous is pink or reddish look for heart disease as the cause of death), marks of the finger nails are nearly always found on the palm of the hands (the hands grasp material such as grass or dirt); and the skin on the hands and feet are corrugated and rough.

Autopsies are remarkable for their negative findings: (1) vertical position of the epiglottis; (2) very little water in the lungs; (3) some water in the stomach and duodenum; (4) hydramic enlargement of the liver; (5) fluidity of the blood; (6) water in the middle ear; (7) froth mucous in the throat - most common; (8) enlargement of the right side of the heart and empty of the left side.

It is evident that no positive statement can be made as to when a body will appear and where it will be recovered. Many stories have been told about persons being brought back to life after being in the water for various lengths of time. In my experience it has been found that if a body had total submersion for over seven minutes we were unsuccessful with our efforts of resuscitation.

The procedure followed in resuscitation was:

Loosen all tight clothing, free air passages, lower head, tongue drawn out, Prone or Schaffer method of resuscitation, friction to extremities,

Coranine and adrenalin, external heat, and pulmotor. The rocking method as advocated by the British Navy was tried in two cases.

In winter months when the temperature is low and ice forms above the spot, cut the ice for a considerable distance around the spot, and many times the body will come to the surface and will be found floating in the ice free area.

A body drowned possesses certain characteristics different from a body placed in water after death from other causes. There is no fixed rule to tell how long a body has been in the water. This can be judged after a careful study of each individual case. In civil cases there is a presumption at law that a body found dead in water came to its death by drowning and the burden of proof is on the party claiming otherwise.

[*This is an error. The maximum depth is 93-100-feet.]