

PHYSIOLOGY

Protect Your Sinuses

Precautions Necessary When Swimming Because Humans Lack Workable Muscle for Closing Nostrils in Water

By JANE STAFFORD

THE old nursery rhyme that starts "Mother, may I go out to swim?" may now be recited with the new last line, "Wear a nose clip in the water."

That is the advice doctors are now giving to those who do much underwater swimming and diving, especially if they have had frequent bouts of sinus and ear trouble. The object, of course, is to keep water out of the nose, ears and sinuses.

Maybe you can swim like a fish and dive like a swan—not that swans dive, but some birds do, the diving petrel, for example. You cannot, however, shut your nostrils and ears automatically or even deliberately when you submerge as diving mammals and birds do.

These animals, which include diving petrels, walruses, seals, alligators, beavers and manatees, have a complicated ring-like muscle which shuts the nostrils tightly when the head is submerged. Those birds which have no outside nostrils have a small elongated tongue which they can plug tightly into the internal nostrils. When they have to open their beaks under water to grab a fish, they can, nevertheless, shut water out of the nostril and the air passages further back.

Man has lost that muscle, or at best has only a small remnant of it which can only rarely be demonstrated to medical students at the dissecting table. It has the Latin name, compressor narium. Evolutionary ages ago, when man's ancestor lived in the water, he probably had a large and workable nostril-squeezer. Not even the most talented ear-wiggler today, however, can move his compressor narium to shut his nostrils for a dive under water.

That is why so many of our divers and swimmers come out of the water with a raw, irritated or stuffy feeling in the nose, a sense of pressure in the head, and a roaring or bubbling sound in the ears followed by a period of not hearing well. You can see them at any bathing beach or pool, snorting and squirting water out of their noses, jogging on one foot with head hanging to one side, trying to get the water out and to get

rid of the stuffy feeling or the pain or ache in the cheek or above the eye. If you do much diving or swimming yourself, you know the feeling well. The jogging and the blowing may dislodge a little water, but unfortunately the pain or ache or stuffy feeling persists in all too many cases, marking the beginning or return of sinus or ear trouble.

If you were to look inside the nose of one of these divers or swimmers, you would see that the delicate skin that lines it was rough and red, like a dishwasher's hands. Doctors call this delicate kind of skin, which lines not only nostrils but also sinuses and the rest of the breathing passages, the mucous membrane. Normally it is covered with a thin fluid which serves as a protection for the tender membrane.

This fluid, called mucus, acts as a trap for germs, dirt or other foreign substances that get into the nose. The wavelike movements of tiny hairs carry it, germs and all, to the back of the nose where there is a passage to the mouth, there to be swallowed or spit out. The wave of the hairs is strong enough, one doctor reported, to move ink droplets about four-tenths of an inch per minute, or to move the mucus from the front to the back of the nose in 10 minutes.

Keeping this mucus film to cover the inside of the nose and moving at its normal rate is reported to be the most important single factor in preventing and eradicating infection in the nose.

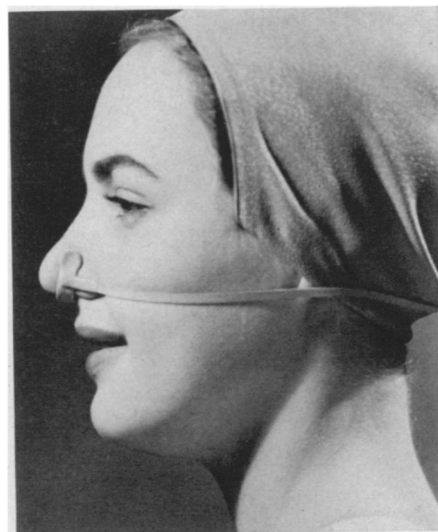
When water is constantly entering your nose from underwater swimming, repeated diving, or the splash of backstroke swimming, the protective mucous covering is washed away. Chemicals in the water and the shock of the coldness of the water may stop the waving movement of the little hairs. And there you are, with nothing to hold back germs in the water or in your own nose, for that matter, which get washed by the water into the sinuses and the Eustachian tubes leading from the back of the nose and mouth to the ears. The sinuses and Eustachian tubes, being ordinarily protected from germs, have not the power to resist them that the nostrils have, one doctor points out.

The final straw to complete your discomfort and the danger to your health comes if the forcible inrush of water damages the delicate skin that lines the inside of the breathing airways, making it swell up so that the exits of the sinuses are closed and water which has gotten in cannot get out. This last may also happen when water is forced inside the ears during a dive if the force is strong enough to break the eardrum or if you already have a little hole in it, as many people have.

Once water and germs get shut up inside the sinuses or the ear, you are likely to be in for a lot of pain and a siege with fast-growing germs that can cause serious trouble.

Ear, nose and throat doctors, knowing these facts, have for a number of years insisted that those who dive and swim underwater should wear ear plugs, and try to keep the water out of their noses by breathing in through the mouth and out through the nose.

This last is easier said than done, as you may have discovered for yourself. Dr. David Mezz, a Brooklyn physician who swims himself and owns to sinus trouble as a result of his aquatic activity, reviewed some of these facts in a report to the *Laryngoscope*, a scientific journal for nose and throat doctors.



KEEPS WATER OUT

This device, or one like it, is the human's substitute for that muscle, now useless, which used to close the nostrils.



PROTECTED

This bathing beauty who is a resident of the National Zoological Park in Washington doesn't need to worry about his sinuses when going into the water. The hippopotamus, like most aquatic mammals and birds, has anatomical provision for closing his nostrils to keep water out. This is shown in the illustration on the front cover which shows the same animal swimming. In the close-up of Mr. Hippo the nostrils are safely closed.

He made some tests with expert swimmers and divers who volunteered to help him find what effect the style of breathing and swimming had on keeping water out of their noses. He found that quiet, face-down floating is most effective in preventing water from getting into the nose. Neither nasal nor mouth exhalation keeps the water out. Feet-first diving, repeated diving and back-stroke swimming are the worst for getting water into your nose. He verified these findings in tests with a glass nose which he pulled through the water in the various positions of diving and swimming.

"These findings were substantiated in another and more significant way," he reports. "Two of our volunteers had stuffy noses and a watery drip for several hours, and one other complained of a full head and an ache above the left eye following the diving sessions. We noticed that J. L. hopped around after most of the tests, trying to dislodge the water that had found its way into the middle ear by way of the Eustachian tube."

Breathing exclusively through the mouth while swimming and diving has most recently been advised for keeping water out of the nose. Not even this is entirely successful, Dr. Mezz declares. Tests made with expert divers showed that though they may think they are holding air in their lungs while they

dive ready to expel it under water, they "really do no breathing during the dive and pierce the water with surprisingly little air left in the lungs."

Most of it is lost in the effort of the dive. Enough is left, apparently, to create a positive pressure that prevents water getting into the nose as the diver plunges into the water, but there is not enough air in his lungs and breathing passages to keep the water from getting in during the under-water and breaking-water phase of the dive.

The answer to all this, in Dr. Mezz' opinion and that of other doctors, is something that will substitute for that lost nostril-squeezer muscle and completely block the water from the nose. Cotton plugs, adhesive tape straps and even clothes pins have been used. Most satisfactory, in Dr. Mezz' opinion, is a rubber covered, spring-steel nose clip with an elastic band to hold it around your head, or around your neck, when you are out of the water.

Science News Letter, August 9, 1941

Iran is attempting to grow *rubber trees*, hoping for commercial production.

An explorer who turned on short wave radio programs for *Amazon Indians* reported that the Indians liked classical music but thought jazz ugly.

PHYSIOLOGY

Nostril Closing Found Not So Rare as Believed

THE TRICK of closing one's nostrils when diving into the water is not a completely lost human accomplishment, despite medical opinion.

One of the leading physicists of the National Bureau of Standards Dr. L. B. Tuckerman, upon reading the Science Service article telling how animals can shut their nostrils to protect their sinuses while people can not, made known that in childhood he had recaptured this ability supposedly lost in the evolutionary process.

"Some of the boys who went swimming together when I was young heard about how hard it is to wiggle one's ears and make the muscle, compressor narium, close the nostrils." Dr. Tuckerman explained. "So we practiced faithfully until several of us could do both.

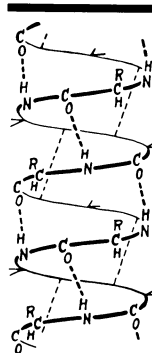
"I can still do both. When I dive today I always close my nostrils."

Doctors advise that water be kept out of the nose, ears and sinuses particularly if the swimmer has had sinus or ear trouble. Diving or underwater swimming forces water into these parts of the human anatomy, unless they are protected. Infections may thus be spread. Use of a nose clip is recommended by those who can not close their nostrils naturally.

Convinced that the ability to use the compressor narium muscle was not exceedingly rare in human beings, Dr. Tuckerman made inquiries among some of his fellow scientists in his section of the Bureau of Standards and found one other person who, while he could not quite close his nostrils enough to stop completely the passage of air, could close them sufficiently to keep water out of his nose while diving.

Science News Letter, August 9, 1941

A botanist reported that in five years he pulled 37,639 *weeds* from a plot of ground ten feet square.



DIAGRAMS OF PROTEIN CHEMICAL STRUCTURE

Copyright 1941 by
Carl F. Krafft

Free upon request

C. F. Krafft

2510 Q St., N.W., Wash, D. C.