Ask Andy

Carbon Dioxide Vital to Life

Andy sends a complete, 20-volume set of the World Book Encyclopedia to Gary McLaughlin, 11, Sioux City, Iowa, for his question:

What happens to the carbon dioxide gas we exhale?

Carbon dioxide is a very busy chemical, constantly being made, broken apart and remade. If this chemical cycle stopped, life as we know it would come to an end. For the carbon dioxide in the air plays a vital role of give-and-take between plant and animal life. Yet the proportion of this busy gas in the air is very small.

We breathe in oxygen and, as everyone knows, we breathe out carbon dioxide. From this bold statement, you might think that the air we exhale is stripped of its oxygen and teeming with carbon dioxide. But this is not so. Ordinary air is 21% oxygen and the air we exhale is about 16% oxygen. Less than 5% of the oxygen atoms combine with atoms of carbon and become molecules of carbon dioxide.

But all over the world millions of us are producing small amounts of carbon dioxide. More is produced by the respiration of animals and plants, by decay, by fires and furnaces, by active volcanoes and by the breakdown of minerals such as limestone. These small amounts add up to countless tons of carbon dioxide—yet this gas is only .03% of the atmosphere. In 10,000 gallons of ordinary air, there are only three gallons of carbon dioxide.

The carbon dioxide we exhale spreads out as far as possible and mixes evenly with the other gases of the air. It spreads through the atmosphere and comes in contact with the green plant world. Now the useless waste gas becomes useful, for green plants need carbon dioxide to carry on photosynthesis, the process by which they make their basic sugar food.

Plants produce some carbon dioxide during respiration, but no enough for their needs in photosynthesis.

They need the waste carbon dioxide exhaled by us and the animal world.

The process of photosynthesis is still not fully understood, but we know that energy from sunlight is used to reassemble the atoms in molecules of water from the soil and carbon dioxide from the air into molecules of sugar. In this complex remaking of chemicals, some oxygen atoms are left over and they are returned to the air. The plant world needs our waste carbon dioxide to keep going. In return, it supplies us with fresh oxygen which we use to keep producing more carbon dioxide to supply the plant world.

A molecule of carbon dioxide is a unit of one atom of carbon and two atoms of oxygen. Our respiration process uses this trick to get rid of the body's waste chemicals. Oxygen combines with carbon and we exhale waste carbon dioxide gas which in turn is used by the plant world. This give-and-take makes the plant and animal kingdoms dependent upon each other.

Andy sends a Hammond's International World Globe to Allen Freeman, age 11, State World Globe to Allen Freeman, age 11, Staten Island, N.Y.

How long is the chain used for land measuring?

The chain unit for measuring land is equal to 66 feet and a quarter chain is equal to one rod unit, which is 16½ feet. In the past, a surveyer's chain unit was actually made of linked metal chain. The link unit measures seven and a half inches and there are 100 links in a chain.

Eighty chains equal 5,280 feet, which is one statute mile. Used as a measure of area there are ten square chains in an acre. In the past, many city streets were 66 feet wide because the surveyers found it convenient to use their chain measures in planning them. Nowadays, the old metal chain is replaced with a flexible tape—66 feet long.

Andy awards each day a full set of the World Book Encyclopedia for the first question he selects to answer. When a second question is answered a large world globe or atlas is awarded. Questions are accepted from teen-age or less-than-teen-age readers. They should be addressed to the Register-Guard, 975 High St., Eugene. Andy prefers that questions be written on postcards, rather than in letter form

To Your Good Health

Diagnosis Foundation Of Medicine

By DR. JOSEPH G. MOLNER

Dear Dr. Molner: My husband gets pains and sharp sensations in the vicinity of his heart. Is this due to nervousness and excess smoking, or could he have heart trouble? He is a nervous person.—M.O.

My friend, you'd be truly surprised how often I receive letters very much like the foregoing one. Trying to guess what a symptom "might be" seems to be turning into the Great American Game.

Since a heart patient usually describes his pain as being in the mid-breastbone region, and as "a feeling of pressure," there is little in today's description to indicate the probability of heart disease. Neuritis of some sort would be a much more likely guess.

But the point is why guess? Why not find out?

Perhaps we have fallen into the habit, some of us, of forgetting the main purpose of a doctor. We don't decide first what ails us and then go to the doctor for treatment.

The primary purpose in going to a doctor is for diagnosis. Precise diagnosis is perhaps the highest skill a physician can have. Once the correct diagnosis is made, the treatment usually becomes fairly obvious and straightforward.

The great danger in patent medicines, or self-treatment, isn't that the medicines are likely to be harmful. The Federal Drug Laws are a safeguard against that.

The real mistake lies in taking medicine for something or other when you aren't really sure what the trouble is. Buckets of liniment won't do anything for a damaged ankle if what it really needs is taping or even a cast.

A small fortune spent on liver pills is wasted money if the real trouble is gall stones.

It's true that intense, protracted nervous tension can cause odd aches and pains—and not just headaches. The neck, shoulders, chest, digestion, abdomen all can act up out of sympathy for our overwrought worry-mechanisms.

Sedatives sometimes help, at least temporarily, but in such cases the greatest relief usually has come from successfully reassuring a patient that nothing serious ail him. Then he relaxes, and so do the pains.

I try to give readers some understanding of whatever health problems they ask about—but I think the greatest service, if I succeed, will be in convincing people that the most valuable single attribute of a physician is to discover what, if anything, is really wrong. Diagnosis is the foundation for all good medicine. So don't try to do too much guessing in advance. Instead, let you doctor do the diagnosing.

Woman Studies Ape Habits

WASHINGTON — A 28-year-old Englishwoman who looks more like a schoolgirl than a scientist is spending six months chimpanzee-watching in the wilds of East Africa.

Miss Jane Goodall, whose studies of the apes are supported by the National Geographic Society, recently returned to her camp in the Gombe Stream Chimpanzee Reserve in Tanganyika. She spent 15 months there in 1960-61 observing the behavior of these favorite zoo and circus animals. Except for a native porter who also did the cooking, Miss Goodall was alone most of the time.

Interested in animals since childhood, Miss Goodall worked at various jobs after graduation from Uplands School in Bournemouth, trying to save enough money to get to Africa. The rapid decline of wildlife worried her, and she wanted to observe animals in their natural state before they disappeared.

Though soft-spoken and feminine in manner, Miss Goodall does not scare easily. Buffalo, leopards and snakes do not deter her. "I have a healthy respect for wild animals — but not fear," she said.

Her chimpanzee subject, which averages five feet tall and 150 pounds when fully grown, can be a match for the strongest man if angered. The most serious attack on Miss Goodall was a swat on the head from a curious male. After the chimps became used to the strange creature in their midst, they accepted her presence and eventually gave her a kind of greeting.

The chimpanzee is considered the most intelligent of apes. In captivity he learns more easily than other animals and is readily trained. These traits won him the honor of helping open man's way to space. But little has been known of how he behaves in the wild.

On her current trip Miss Goodall hopes to capture chimpanzee behavior on film, and fill in gaps in her research. What she recorded on her first expedition, however, already revamps ideas previously held about chimps.

Miss Goodall was surprised to see the chimpanzees not only using tools, but making simple ones. She watched them pick straws, push them into termite mounds, extract them crawling with termites, then lick them like lollipops. When straws were not available, the chimps made suitable "forks" by stripping leaves from slim twigs.

Previously scientists believed chimpanzees dine only on plants and insects. Chimps Miss Goodall observed also ate hare, bush pig and bushbuck, alternating each bite with a mouthful of leafy salad.

Unlike gorillas which band in family herds, the East African chimpanzees seemed to have no rigid groups. The most stable relationship Miss Goodall found is that of a mother and infant or adolescent offspring. They stick together through thick and thin.

Three times, either in torrential rains or during the rainy season, Miss Goodall saw males putting on an extraordinary show. She calls it the "rain dance," but has no explanation for it. While females and young watched from box seats in trees, husky males tore off and brandished branches, then hurled themselves down a steep slope. After a rest they walked slowly back up the hill and began the "dance" again.

The chimps lived peacefully with one another and their wild neighbors. Older children played with the babies. Young chimps and baboons often played together. Even leopards did not seem to bother them — Miss Goodall watched a feeding mother and infant ignore a passing cat.