

SPECIAL UPDATE

DISCOVERIES

**THE STAYING POWER OF SKUNK "PERFUME"**

DR. WILLIAM WOOD, A chemistry professor at California's Humboldt State University, has identified the properties of skunk musk that makes its smell linger. Thiols, molecules containing sulfur, have long been known to cause the unpleasant smell associated with skunks. Dr. Wood has found that the musk also contains thioacetate molecules, which are oily and themselves have an unpleasant odor. When the musk is sprayed, the thioacetates react slowly with water from the air or from the body of the victim, turning into one of the three thiols in skunk musk and causing long-term odor. He speculates that the long-lasting smell may teach sprayed animals to keep away from skunks.

Contrary to popular belief, tomato juice is not the preferred remedy for a run-in with a skunk. According to Dr. Wood, alkaline laundry soap works best to get

rid of that distinctive aroma. Source: *The New York Times*

**A BEE-WILDERING FEAT**

EXACTLY HOW THE BUMBLEBEE, with its relatively large body and short wings, stays aloft is still a mystery. But researchers at the University of Cambridge in England and at Rutgers University in New Jersey have succeeded in measuring the bumblebee's oxygen consumption during forward flight—the first such data compiled for any free-flying insect and, according to the scientists, a major step toward comprehending the physiology and mechanics of insect flight.

It's no breeze measuring the oxygen consumption of a bumblebee, which has 24 breathing holes. The scientists devised a highly sensitive wind tunnel and sent more than 100 bumblebees, one at a time, through the tunnel. Then they measured the minuscule differences in gas pressure between the bee chamber and an identical

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Eau de striped skunk

**Rhino Horn in China: A Problem for Conservation . . . and the World of Art**

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*Although no rhinos now live in China, there are plenty of rhino horns and pieces of horns there. When the Chinese CITES\* Management Authority required businesses and factories to register their stocks of rhino horn, some 21,725 pounds were registered. Where did it all come from? What is it used for? Is trade in rhino horn continuing in China, and if so, how will the world's endangered and beleaguered rhino populations be affected? Wildlife investigator ESMOND BRADLEY MARTIN reports.*

IN APRIL 1990, I WENT TO CHINA AS A GUEST OF THE CITES Management Authority and visited several import-export companies and drug factories holding rhino horn. Accompanied by an interpreter and government officials, I examined rhino horn in godowns (Oriental warehouses) in Beijing, Tianjin, and Guangzhou. As I had expected, most of the horn was from African rhinos. In the 1970s and until the mid-'80s, merchants in Yemen imported enormous quantities of rhino horn from Africa to make dagger handles. The pieces and dust left over after carving were sold to China.

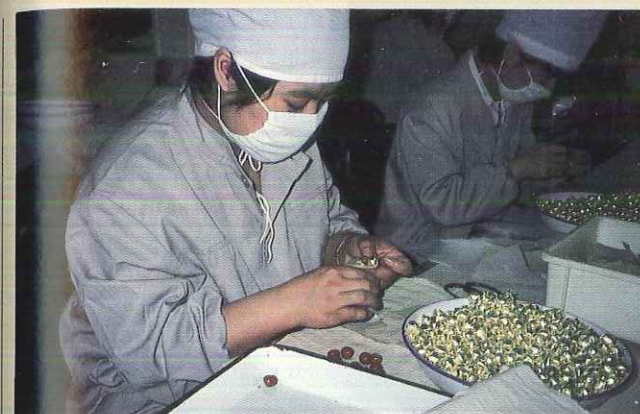
Powdered rhino horn is a traditional medicine in China and other parts of Asia. It is valued as a cure for a variety of ailments, particularly for lowering fevers. Because drug firms pulverize the horn when they make tablets and capsules, it does not matter how tiny the pieces are as long as their genuineness can be assured. Of course, the price asked for scrap rhino horn is considerably less than that for whole rhino horns. Except in the storeroom of the Guangdong Drug Corporation in a Guangzhou suburb, I saw very few whole rhino horns, and practically none of African origin.

While the Chinese prefer Asian rhino horn, believing its healing properties more highly concentrated, it is vastly more expensive than African horn and rarely made into pills. In February 1990 rhino researcher Andrew Laurie saw some raw African horn for retail sale in Chengdu for \$1,785 per pound, and Sumatran horn for \$11,000 per pound—prices comparable to what such horn would fetch on the international market.

The wealthy Chinese in Taiwan, Singapore, and Indonesia who buy Asian rhino horn for medicinal purposes almost always insist on seeing whole or recogniz-

\*Convention on International Trade in Endangered Species

RHINO WATCH



In a Beijing pharmaceutical factory, workers wrap medicine balls containing rhino horn.

able large parts from which slivers are cut. I suspect that the Indian and Sumatran whole rhino horns I came across in Chinese godowns were cheaply bought, probably many years ago.

During the past decade, the use of substitutes for rhino horn medicines has been strongly encouraged in Asia, not only by conservationists but also by traditional pharmacists and doctors because of soaring costs, severely limited sources, and international trade restrictions on rhino products. Generally, saiga antelope and water buffalo horns are accepted as substitutes in raw form. While I was in China, I learned that researchers from the country's most famous pharmaceutical factory, Tong Ren Tang, in Beijing, had carried out a five-year study to find the best substitute to use in manufactured drugs and were convinced that water buffalo horn was almost as effective.

**During the past decade, the use of substitutes for rhino horn medicines has been strongly encouraged in Asia.**

Nevertheless, the factory continues to make three patent medicines containing rhino horn, one for adults and two especially for children. When I asked why buffalo horn could not be used instead in these drugs, I was told that expensive stocks of rhino horn had to be used and that Chinese living overseas still believe it to be superior and would not buy the pills if it were omitted. In Tianjin and Guangzhou factories I heard the same explanation. In fact, overseas Chinese are nearly the only consumers nowadays, and they are the source both of large profits for the drug firms and of large sums of foreign currency required to recoup the expense of China's rhino horn stocks.

Among the jumble of sacks, plastic bags, crates, and cardboard boxes holding chips, powder, and whole rhino horns, heedlessly piled together in the storerooms I visited, were bags full of antique rhino horn carved into plates, cups, libation bowls, brush holders, and figurines. Some of the carvings were from Sumatran, Indian, and even Javan rhinos. A few small dishes with Buddhist figures probably came from Cambodia, but the others were certainly carved in China and purchased or stolen from private Chinese collectors and museums. The trading corporations and medicine factories have been acquiring them from every possible source since the 1949 revolution. No one can guess how many magnificent rhino horn carvings, produced by master craftsmen in the Ming (1368–1644) and Ch'ing

(1644–1911) dynasties, have already been ground down to powder by the drug firms.

The employees who showed me the rhino horn works of art had no idea of their value; they dumped them onto the cement



Bits of leftover rhino horn are used to make Chinese medicines.

floors, and some pieces were irreparably scratched and chipped. It is obvious that the primary purpose of the drug firms is to earn as much profit and foreign currency as possible. If they would auction their superb antique rhino horn carvings on the world market, they would make higher returns than they could with any medicine.

Although CITES has banned all international trade in rhino products and urged all member states to prohibit internal trade, and though the Chinese CITES Management Authority has not issued any export permits for rhino horn medicines since 1988, foreigners still come to China to buy rhino horn drugs for resale in traditional pharmacies throughout Southeast Asia, and the drugs are still leaving the country. Management Authority statistics show that approximately 1,430 pounds of rhino horn are used annually in China. At this rate of use, China has enough supplies to make rhino horn medicines for the next 15 years. The easy availability of these drugs encourages demand, in turn putting greater pressure on the world's remaining rhinos. □

SKUNK SCENTS . . . FLIGHT OF THE BUMBLEBEE . . . BITTER MEDICINES FOR RHINOS

PHOTOS BY ESMOND BRADLEY MARTIN