

emeritus of German at the University of California at Santa Barbara, was the assumption (which even the Supreme Court made) that the yarmulke is an old and sacred part of the Jewish faith.

In the Torah, he notes, nothing is even said about covering the head, much less with a yarmulke. "Neither in the 248 positive, nor in the 365 negative, precepts listed in the Torah (the dos and don'ts), is there any mention of this rite." Throughout the Old Testament, "covering the head was a mark of sorrow and shame," as when King David fled his son, Absalom, with covered head and bare feet.

The Talmud (completed about A.D. 500) makes contradictory statements about covering the head, which is not surprising since it is basically a record of debates about Jewish religious law. In several Talmudic parables, a *bared* head is considered a sign of deference to God.

Yet, Steinhauer concedes, although learned Jews throughout history have tended to favor the bared head, "it seems to be an incontrovertible fact that in the course of the centuries—some say as early as the third or fourth century of the com-

mon era—the custom of covering the head spread and became more and more firmly entrenched in Jewish life." The real turning point came with the birth during the 19th century of liberal Reform Judaism, which "goaded the orthodox into endowing the rite with a significance it had not enjoyed until then."

Even so, Steinhauer continues, the custom was far from uniformly observed. When Pope Paul VI visited Israel in 1964, an Israeli newspaper printed a photo of the nation's president greeting him, with the caption, "The one with the yarmulke is the Pope." Even among those who preferred covering the head, the yarmulke did not prevail until after World War II. It is Steinhauer's guess that young Jews, like their Gentile counterparts of the era, simply found the plain hat too old-fashioned. And only in recent years has the yarmulke become *the* overt symbol of being Jewish.

The point of all this, Steinhauer says, is that even if Captain Goldman felt obliged to keep his head covered on religious grounds, his service cap would have sufficed. Jews, he concludes, should save their ammunition for more worthy causes.

SCIENCE & TECHNOLOGY

The Search for Babel

"The Mother Tongue" by Vitaly Shevoroshkin, in *The Sciences* (May–June 1990), 2 E. 63rd St., New York, N.Y. 10021.

Hopscotching from the words *nigi* and *gini* (predecessors of the English nag and gnaw), to the Sino-Caucasian word *gin*, to Austro-Asiatic *gini*, and to Congo-Saharan *nigi*, linguists may have arrived recently at a monumental destination: the mother tongue of all mankind.

All of these words are cognates for the word *tooth*, says Shevoroshkin, a linguist at the University of Michigan, and they suggest that the original terms, uttered perhaps 100,000 years ago, were *nigi* and *gini*. So far, he and other researchers have reconstructed between 150 and 200 words of the language they call proto-World.

The search for proto-World began, in effect, more than two centuries ago when William Jones, an English judge stationed in Calcutta, India, noticed strange affinities between Indian Sanskrit and the languages of Europe. The cognates for *brother*, for example, are *bhratar* in Sanskrit, *phrater* in Greek, and *frater* in Latin. In 1786, after intense study, Jones announced his startling conclusion: Sanskrit, Greek, and Latin had all "sprung from some common source which, perhaps, no longer exists."

Other researchers soon added Germanic, Persian, Baltic, and Slavic to the

original three. All were grouped together under the rubric Indo-European, and their family tree traced back to an ancient tongue spoken perhaps 8,000 years ago. It took another century for scholars—including the brothers Grimm of fairy tale fame—to painstakingly reconstruct that lost language.

That was hardly the end of the matter. As early as 1903, a Danish linguist named Holger Pedersen noted vague similarities between Indo-European and other proto-languages, including Semitic (precursor of Arabic and Hebrew) and Altaic (ancestor of Japanese and Korean). But it was not until 1964 that two Soviet scholars, Vladislav Illich-Svitych and Aaron Dolgopolsky, were able to reconstruct (separately) a single ancestral tongue called Nostratic, a tribal language that they believe was spoken some 14,000 years ago.

Nostratic, in turn, may be only one of several language "phyla": The others are Sino-Caucasian, Australian, Khoisan, Indo-Pacific, Austric, and Amerind.

During the last 10 years, Sheveroshkin and others, now aided by computers, have compared the different proto-languages to reconstruct proto-World. Actually, he says, dating proto-World has been harder than reconstructing it. Based on recent studies by geneticists, research on

ancient migratory patterns, and archaeological evidence, backers of the proto-World theory concluded that the language is close to 100,000 years old.

What does their language tell us about our ancestors? They were truly people of few words and spared none for description of the emotions. Unsurprisingly, the most common word was *ngai* ("I"). And, apparently, they were bothered by many of the same things that bother us, for they took the trouble to invent words for fleas, lice, and in-laws.

The Importance of Genes

"We cannot continue to think about disease as an outside enemy," geneticist P. A. Baird argues in *Perspectives in Biology and Medicine* (Winter 1990). The enemy is now us. Baird favors a "paradigm shift" in medicine, replacing the "war" against disease with efforts to detect and prevent genetic maladies.

The relative contribution of genetic causes to all causes of disease in our population has likely increased markedly in this century for many disorders. For example, in the early years of the century the infant mortality rate in the United States was about 150 per 1,000 live births. It is estimated that about five of these 150 deaths, or three percent, were due to a wholly or partly genetic cause. Nowadays the infant mortality rate is closer to 15 per 1,000 live births. However, the five are still there in the genetic category; but, instead of constituting three percent, they constitute over one third of all infant deaths In the 1920s the role of vitamin D [in rickets] was elucidated, and food supplementation by vitamin D on a population basis was initiated. The incidence of rickets declined dramatically, but cases continue to appear. However, instead of being environmentally caused, rickets [sufferers] now have inherited genes giving a disorder of mineral metabolism—rickets—even when normal amounts of vitamin D are present. The heritability of rickets is now very high, and these cases need lifelong care.

Killer Chlorophyll

If you were asked to name the most dangerous substances known to man, chlorophyll probably would not come immediately to mind.

One reason we are not aware of its po-

"Making, Breaking, and Remaking Chlorophyll" by George Hendry, in *Natural History* (May 1990), Central Park West at 79th St., New York, N.Y. 10024.

tential hazards, writes Hendry, a researcher at the University of Sheffield, is that nature has devised elaborate means to contain them. The autumnal glories of a Vermont sugar maple are partly the result