

exotic flavor around, the naming of new baryons was for the moment in good shape. But the christening of newly discovered mesons remained as inspirational as the naming of one's children. (We have it on good authority that the A_1 and A_2 mesons take their names indirectly from the prophet Amos.) And as the number of quark flavors has risen to six (five for sure), our alphabets are running out of letters, and the Particle Properties Data Booklet, which began life as a "wallet card," now threatens to become a tome.

The Particle Data Group, assembled by Rosenfeld 20 years ago, is once again undertaking to create order out of chaos. They have sent around a "Proposal for the Systematic Naming of Hadrons" for discussion among particle physicists. Copies are available from the Particle Data Group at the Lawrence Berkeley Lab, Berkeley, California 94720, or from L. Montanet at CERN, CH-1211, Geneva 23, Switzerland. The PDG would like to hear the comments of interested colleagues before the end of April.

In the proposed new nomenclature, the baryon naming system changes relatively little, except for the appending of subscripts to indicate heavy-quark content. A "heavy quark" nowadays is a charmed, bottom or top quark. The generic names N , Δ , Λ , Ξ , and Ω , which in olden days specified isospin and strangeness, are now generalized to indicate the number of first-generation (up and down) quarks in a particular baryon. The N s and Δ s have three, the Λ and Σ have two, and so forth. Thus the $\Omega_c(2740)$, having no first-generation quarks, would have one charmed quark, two strange quarks and a mass of 2.740 GeV.

The proposed new meson convention is less simple. It seeks to let one identify quantum numbers unambiguously while doing a minimum of violence to the oldest, most familiar names. The hope is that "physicists will not have to pull out the (144-page) Particle Properties Data Booklet every time a slightly unfamiliar particle is mentioned."

With two egregious exceptions among the vector mesons, lower-case greek and latin letters are always used to designate mesons carrying no net strangeness or heavier flavor. The B , A and H mesons have all been relegated to the lower case, but all the Υ vector mesons and the J/ψ (3100) retain their capital standing. An abortive attempt to reduce the J/ψ to a mere ψ met, we are told, with displeasure in high places. All the unflavored vector mesons, in fact, emerge with their famous names intact.

For the unflavored mesons of "unnatural" parity, π , η , b and h become

Underground breakthrough at SLAC



JOE FAUST/SLAC

A breakthrough of the more literal sort occurred on the last day of November at the Stanford Linear Accelerator Center. This picture was taken in the Stanford Linear Collider tunnel shortly after miners broke through the last barrier separating the two SLC arcs that had been bored simultaneously during the course of the year. The 9000-foot SLC tunnel consists of two great arcs, emerging from the downstream end of the 2-mile SLAC linac like the arms of a stethoscope. In place of the space between the doctor's ears is a straight section a few hundred feet long, joining the two arcs.

Positrons and electrons, accelerated to 50 GeV in the linac, will collide head-on in this straight section after traversing their respective arcs. The \$112-million SLC should be providing high-energy experimenters with 100-GeV e^+e^- collisions early in 1987, two years before LEP, its much larger European counterpart, is completed in Geneva. Unlike LEP and other storage-ring colliders, the SLC is a "single-pass collider," intended as a makeshift prototype of the linear colliders that are expected to dominate e^+e^- physics at high energies (see PHYSICS TODAY, September 1984, page 17).

generic names, depending on parity and isospin, with heavy-quark content indicated by subscripts. Spin is also indicated by subscript, except for pseudoscalars and vector mesons. A few of the more radical changes are: $A_3(1680)$ becomes $\pi_2(1680)$; $\delta(980)$ becomes $a_0(980)$; $H(2030)$ becomes $f_4(2030)$.

The strange and heavily flavored mesons all get capital letters. The strange ones are all K 's, the charmed all D 's, and B and T indicate bottom and top flavors. Asterisks, as of old, indicate states of "normal" spin-parity.

Thus the $Q_2(1400)$ becomes the $K_1(1400)$ and the $\kappa(1350)$ becomes $K_0^*(1350)$. The F becomes D_s .

What does one do with particles whose quantum numbers are still shaky? The PDG suggests temporary names such as X or x in these cases. The symbols discarded by this new hadron nomenclature will now become available for naming exotic new particles that do not fit the traditional quark-model mold—glueballs, Higgs bosons, squarks and other wonders the theorists tell us to look for. —BMS