"No News Escapes Us"

The Black Hole

Abandon Hope All Ye Who Enter Here

Announcement of M.I.T. Physics Colloquium By K. Brecher — Thursday, February 14, 1974

Les Corps Obscurs de Laplace-Existent-Ils?

PARIS, 1796 – At a recent meeting of L'Academie des Sciences, M. Le Marquis De Laplace, the eminent mathematician and natural philosopher, provided for all those present a most amusing and entertaining evening. With readings from his recent best seller "Exposition Du Systeme Du Monde," while circulating amongst the audience reprints of his latest paper in the Allgemeine Geographische Ephemeriden, he presented a talk entitled "Future Progress of Astronomy." Amongst other speculations, he suggested that the Universe is filled with "des corps obscurs," dark bodies, in numbers equal to the visible stars! He bases these ideas on his calculations which show that "a luminous star, of the same density as the earth, and whose diameter should be 250 times larger than the sun would not, in consequence of its attraction, allow any of its rays to arrive at us." He concluded by saying that "it is therefore possible that the largest luminous bodies in the universe may, through this cause, be invisible." Despite the irrefutability of his mathematics, he failed to suggest how any object would come to exist in such an ignominious state. One can only hope that his good name will not be darkened by such flights of fantasy. (Ed. note – By the publication of the fifth edition of "The System of the World" Laplace had expunged all references to "des corps obscurs.")

Book Review:

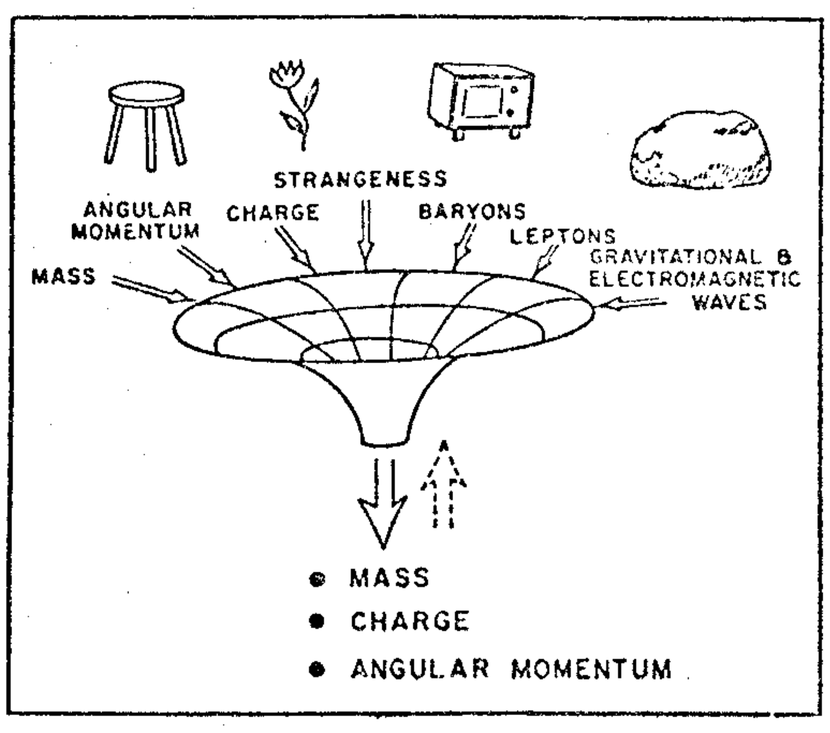
"The Other Side"

by Alfred Kubin

VIENNA, 1909 – In a fit of brilliant insight and intense productivity, the great Austrian pre-surrealist painter Alfred Kubin has succeeded, where no man has before him, in grasping the full physical significance of collapse into a black hole. A brief illustration from his novel "Die Andere Seite" should suffice to support this claim. Turning from the brush to the pen, he wrote: "And now, for the first time, I discovered in the veil of mist an immense, high wall. Suddenly, unexpectedly, it loomed up before me. Someone carrying a light was walking in front of us toward an enormous black hole: that was the gate to the Dream Kingdom. As we approached I noticed its huge dimensions. We entered a tunnel, keeping as close as we could to our guide. Then something strange happened. I had already penetrated some distance into the vaulted passage when I was overcome, as though at a blow, by a wholly unfamiliar and dreadful sensation. It began at the back of my head and ran down my spine; my breath stopped, and my heart beat wildly. Helplessly I looked toward my wife, but she herself was white as a corpse, deathly fear mirrored in her face. In a quivering voice, she whispered: 'I shall never come out of here again.'" His recognition of the role of tidal forces and of the irreversability of such a predicament are all the more remarkable for they predate Herr Einstein's General Theory of Relativity by seven years.

SCIENTISTS FORESEE: COLLAPSE INEVITABLE

BERKELEY, 1939 – Out of the depths of the Great Depression, and confronted with the possibility of another world-wide conflagration, the brilliant young American physicist J. Robert Oppenheimer and his graduate student, former truck driver Hartland Snyder, have reported in the latest issue of the Physical Review that "when all thermonuclear sources of energy are exhausted, a sufficiently heavy star will collapse." Such news should be kept in mind by those who would hope that a detente could be achieved by bringing pressure to bear on arbitrarily large bodies to counter the ever present gravity of the situation. Furthermore, as the authors are the first to point out, while a sufficiently distant observer will never see its final demise, a person collapsing with a massive body will experience all the accompanying stresses in less than a day.

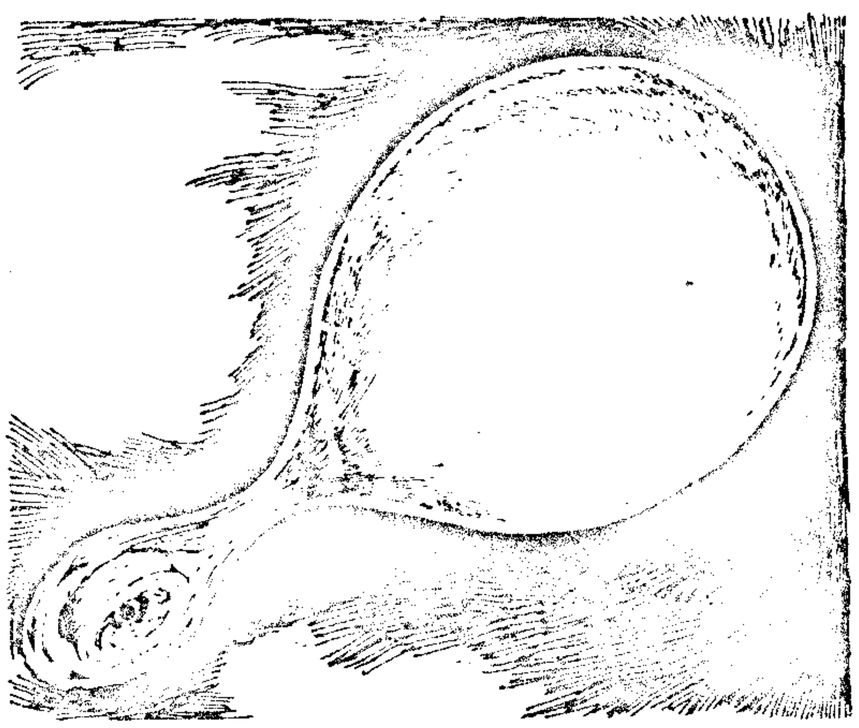


A rose is not a rose, nor would it smell as sweet, were it to be inside a black hole whose only attributes are mass, charge, and angular momentum.

CYGNUS X-1: BLACK HOLE OR RED HERRING?

NEW YORK, April 1, 1971 – The New York Times today reported for the first time the discovery of a "black hole in space." Variously referred to as a "collapsar" (A.G.W. Cameron of the (Veritas) Center for Astrophysics) or "frozen star" (Ya.B. Zeldovitch of the Soviet Academy of Sciences), such objects have long filled the void of theoretical astrophysicists waking hours. Now at last, it seems, there is an object upon which they can lavish their speculations. Scientists from American Science and Engineering, Inc., headed by Dr. Riccardo Giacconi, making observations with instruments aboard the first small astronomical satellite, nicknamed UHURU, claim to have finally shed some light on the matter of black holes or, more precisely, say that they have seen the light, from matter spiralling headlong into the oblivion of a black hole. They interpret the x-ray emissions from Cyg X-1 as arising from gas flows in a close binary star system containing a massive young star ejecting unwanted matter, which then accretes onto its fully collapsed companion (see picture). Waving aside the objections of a dissident minority of scientists who question whether Cyg X-1 is fully collapsed, or massive, or accreting, or, even, whether it is in a binary star system, Dr. Giacconi told this reporter in no uncertain terms that "...

(Continued on page 13)



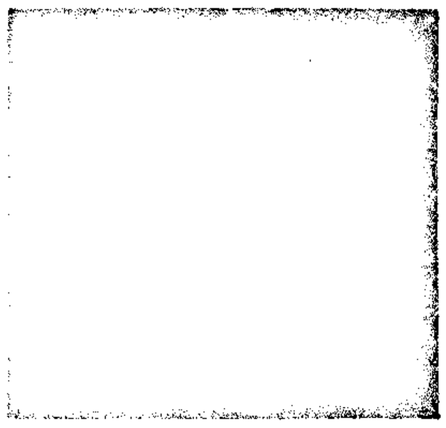
Popular model of Cyg X-1, consisting of a binary star system containing a black hole (at the center of the disk, lower left) accreting matter ejected from its more massive companion.

Exciting Young Star Finds Happiness With Old Degenerate Dwarf

BOSTON, 1973 – On a day with very little news reaching us, a hopeful and touching story has emerged. It is commonly believed that overweight old stars have no alternative but to eventually collapse and disappear from sight altogether. Not so, say two MIT Professors, K. Brecher and P. Morrison. In a surprising twist of the usual scenario, they suggest that such stars can avoid this fate by turning instead into degenerate dwarfs. If they get around enough, such stars can again become radiant and even, as they suggest in the case of Cygnus (The Swan) X-1, cohabitate with a star as young and bright as HD226868. (Ed. note – This story should satisfy those readers who have accused us of a discriminatory publishing policy. It is only the first in our new affirmative action series featuring such recently neglected stars as white dwarfs, red giants and, if space permits, blue stragglers. This series will complement our ongoing reports on the activities of some prominent white holes. Owing to cosmic censorship, however, we have been unable to uncover any information surrounding naked singularitites.)

Princeton Professor Proclaims Black Holes Have No Hair

PRINCETON, 1972 – Professor John Wheeler of the Princeton University Physics Department, reporting on his own researches, as well as those of Drs. Penrose, Hawking and others of Great Britain, has revealed that should black holes be discovered soon, there is little to distinguish one from the other. This follows, he says, from very general and powerful mathematical theorems which imply that such a body is completely characterized by three independent quantities: mass, charge and angular momentum (see figure). Such a conclusion, however, may be premature as has been emphasized by Professor F.



First detailed color photograph of a black hole. Note features at upper left and center, in good agreement with current theoretical predictions.

Curtis Michel in his recent article in the journal Comments on Astrophysics and Space Physics entitled "Hair Tonic For Black Holes." He cautions the unwary, "If black holes indeed have no hair, it could be because they have no scalp for it grow out of. However, there is a lot of stuff floating about looking suspiciously like dandruff."

Texas Teacher: Tout Tunguska Tragedy

AUSTIN, 1973 – Waving aside as extravagant and speculative the claims by Russian scientists that the immense explosive event which occurred in the Tunguska region of Siberia on June 30, 1908 was a great meteorite or comet, two scientists at the Center for Relativity Theory at the University of Texas, A.A. Jackson IV and M.P. Ryan Jr., have explained the event as having resulted from the passage of a mini black hole through the earth. Their suggested test of the theory, by hunting through old ships' logs for any record of the expected air and sea shock disturbances accompanying the re-emergence of the black hole in the North Atlantic has so far been stymied by Russian refusals to provide the vital records. (Tass, the Soviet News Agency, comments: Bourgeois captialist Americans, in an attempt to discredit the greatness of the People's Meteorite, which fell within Mother Russia in 1908, have put forward the ludicrous suggestion that it was a black hole, that most degenerate of all western inventions . . . .)