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COVER: The X-ray reveals the congenitally deformed skull of a 6-year-old boy with craniosynostosis (cloverleaf or kleeblattschadel deformity). A Harvard Medical School research team recently reported reshaping that patient's skull with an implant that induces new bone growth. For the postoperative results and more on the bone-growing procedure, see page 317. (X-ray courtesy of Children's Hospital Medical Center)

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LETTERS

The math that refreshes

I was thrilled to read your article "Computer Calculus" (SN: 4/18/81, p. 250). Ever since I got a TRS-80 computer about a year and a half ago, I have been searching through bookstores and libraries for anything on symbolic computing, but numerical analysis seems to be the only aspect of computer math that is discussed. "Computer Calculus" is a refreshing change.

I would greatly appreciate it if you would tell me where to order a cassette version of MACSYMA for the TRS-80. I would also be delighted if you would indicate where literature on symbolic computer algebra can be found.

Barry L. Moore
Carthage, Tex.

(Those interested in obtaining product information or literature on symbolic computer algebra should contact David Stoutemyer, The Soft Warehouse, P.O. Box 11174, Honolulu, Hawaii 96828 or Microsoft Consumer Products, 400 108th Ave., N.E., Suite 200, Bellevue, Wash. 98084 —Ed.)

As a long-time proponent of symbolic computer calculus, I was delighted to see your article on the subject.

As a co-author of MUMATH, I am also flattered to have it described as being condensed from the major parts of MACSYMA; but that is not true: Although many of the features of MUMATH were inspired by corresponding ones of MACSYMA, the internal design is quite different. Moreover, although MUMATH does fit a surprising number of features into a tiny microcomputer, the mainframe MACSYMA system has significantly more sophisticated features; and it can accommodate significantly larger symbolic results without exhausting memory space.

As the author of PICOMATH, I can say that it is also misleading to describe PICOMATH as a stripped-down version of MUMATH — they too are quite different: Although MUMATH is generally substantially more powerful, PICOMATH can do a few things that MUMATH cannot.

David R. Stoutemyer
Honolulu, Hawaii

Science and the shroud

It was disheartening to read that scientific "experts" are wasting their time checking the authenticity of the Shroud of Turin (SN: 4/25/81, p. 259). It hasn't even been established yet if Christ was an historical character. Next, I suppose a carbon 14 test will be conducted on the hide attributed to the Mother Goose cow that jumped over the moon!

James Erickson
Minneapolis, Minn.

It is amazing how unscientific the approach to the Shroud of Turin has been. The 13th century Catholic Church had a far more intellectual/scientific approach. After all, the basic fascination with the shroud is whether or not this shroud could, or could not, have been used for the burial of a body at the beginning of the Christian Era. (Even so, this would not confirm that the body would have been that of Christ.) The Church approach (see *Catholic Encyclopedia*) was simple and honest. When the shroud was first submitted to the Church in A.D. 1360, it was one of five or six similar cloths, all of which were claimed by their individual churches to be "the" shroud. A series of documents were discovered by the Church which proved that in 1389 the Bishop of Troyes appealed to Pope Clement VII to "please put a stop the scandals connected with the shroud." It was, the Bishop declared, the work of a man, who, several years before, had confessed to having made it and having exhibited it in the Church in such a way that the populace believed it to be the authentic shroud of Jesus Christ. The Pope decided, after full examination, that if it was shown in the future the priest should declare in a loud voice that this was not the real shroud of Christ, but only a picture made to represent it. The manner of creating this fake could have been as simple as killing some vagrant and wounding and beating him in the appropriate places before or after the killing. Life was cheap in the Middle Ages.

Finally, the Church noticed that while witnesses of the 15th century spoke of the image as being so vivid that the blood seemed freshly shed ("miraculously preserved for 1,500 years"), some fifty years later it had darkened and faded considerably. The Church's religious/scientific conclusion was that had the cloth retained its brilliance through countless journeys and changes of climate for fifteen centuries, this miracle would have continued and the cloth would have retained its brilliance. On the other hand, if it was a fabrication of the 15th century then this rapid fading would be exactly what we should expect. (Elementary, my dear Watson.)

I must frankly say that this simple conclusion was more intellectually scientific than that of the scientists — particularly from a Church which would have delighted in finding a true relic of Christ's.

T. V. Renterghem, Director
Malibu Institute
Malibu, Calif.

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