logy developed for particle physics experiments could soon be exploited further in the nuclear physics area. Other new techniques, involving lasers for example, are extending the range of experiments which can be carried out.

Overall, the Conference paid a lot of attention to topics and phenomena which only a few years ago would have been considered exotic. With many novel ideas being put forward and with new projects afoot, a lot of fresh ground could have been covered by the time of the next meeting, scheduled to be held in Florence in a few years.

We are grateful to Bjorn Jonson and Curt Ekström of the ISOLDE collaboration at CERN for helping us prepare this report.

When dinosaurs walked the earth...

Geologists (among them Luis Alvarez' son) have analysed layers of rock that were laid down at about the same time as the dinosaurs ceased to exist, some 65 million years ago. Neutron activation analysis reveals unusual concentrations of heavy elements such as iridium, possibly indicative of intense meteorite activity.

The evidence suggests that this was due to just one huge meteorite, about 10 km diameter, which hit the earth and produced a thick dust cloud, blocking out the sun for several years. As a result, vegetation withered and animals died, so that eventually there was no food left for the biggest animals of them all, who starved to death. No vertebrates heavier than about 25 kg appear to have survived. Some smaller animals, the ancestors of the mammals, fared better as they could eat decaying vegetation and insects. As the dust cloud dispersed, plant life restarted from the remains of the root systems, and evolution continued, although highly affected by the meteorite catastrophe.

Computing Conference at Bologna

From 9–12 September a Europhysics Conference on Computing in High Energy and Nuclear Physics, organized by the Computational Physics Group of the European Physical Society, was held in Bologna, attracting some 150 participants. Its purpose was contact and exchange of information between experimental physicists (from both fields of research) and computer experts (on whom the successful outcome of the research has become increasingly dependent). Proceedings of the Conference will be published as a special issue of Computer Physics Communications.

Review papers by Leon Van Hove and M. Macfarlane set the research scene in high energy and nuclear physics respectively, and there were papers by B. Giraud, D. Ponting, Z. Szymanski and K.J.F. Gaemers which brought out some of the many areas of theory where the power of large computers is essential for solving the present problems. On the technical side, G. Franke, M. Masetti and M. Regler made the link with experiments showing the crucial role of computers in all stages of data acquisition and analysis.

The continued rapid evolution of computer hardware and software is keeping experimenters on their toes, not only in terms of improving their present techniques, but sometimes radically rethinking how to approach the task of data reduction. Progress was very evident in areas of mass storage, on-line systems, programming languages, large-scale data transmission, etc. Mervyn Hine reported on the first experience in the high energy physics field with high speed data communication by satellite—the STELLA project.

The trend towards 'decentralization' of computing power was very clear. More and more tasks are being undertaken by the local computer at the experiment, thanks to the growing power and falling costs of microprocessors and the growing skill in making use of them. It seems probable that we are in the early days of this trend and it is also probable that the abilities which are emerging, spurred on by the needs of physics, will find many applications in other fields.

Despite the decentralization trend, the large central number-crunchers are not exactly short of customers. On the contrary, the demand on the central systems continues to grow.

*** Stop Press — two ISABELLE prototype dipole magnets have now reached the 5 T design field.**

BROOKHAVEN 5 T magnet

After a sequence of tantalizing disappointments, tests in September with two new superconducting magnets have brought encouragement to the Brookhaven team building the ISABELLE proton-proton storage rings. For the first time, a magnet topped 5 T—an achievement of deep psychological significance as it means the field level needed to operate ISABELLE at 400 GeV has been attained.

A particular aim in the construction of these latest prototypes was to examine the effect of heavily stressing the magnets, so that they were much more mechanically rigid than their predecessors. One of the magnets was 'double shrunk'—a first shrink of the coils was made into aluminium bands to take most of the

However its nature is changing because of the higher quality input coming from the more sophisticated local computers. There is call for more storage capacity, faster output devices, cleverer graphics facilities, etc., to respond to the new input. B. Zacharov, given the way costs and abilities of computers have moved, proposed a fresh look at the function of the 'main computer', suggesting a parallel attack to the number-crunching process with many small systems rather than a single powerful hierarchical computer.

A relentless theme was the need for accepted standards and practices through all the stages of data processing. This has been promoted recently by the European Committee for Future Accelerators who set up a Working Group led by E. Lillestöl and E.M. Rimmer. Similar efforts are under way in the USA.

With the increasing size of experiments and of the number of physicists involved in the collaborations necessary to carry them out, this need has become urgent. It would greatly ease the participation of groups spread around many countries if standards can be agreed. A modular approach with compatible interfaces would then be possible in building up the data acquisition and analysis system of an experiment. Individual Universities would be able to tackle a part of the system and make a useful contribution fully compatible with what is coming in from other centres in the collaboration.

Subgroups have been set up to study the possibilities in special areas—Microprocessor buses, facilities and applications / Data acquisition / Graphics, histogramming and command processors / Software libraries / FORTRAN / Off-line calibration and analysis / Bookkeeping and documentation. It could prove very fruitful if standards can be established in all these areas in the same way that the CAMAC hardware standards have proved so very fruitful over the past decade.

The help of Rudi Bock in supplying the information for this article is greatly appreciated.

Mervyn Hine (left) and Ben Segal inspect the antenna installed at CERN for the STELLA project on high speed data communications by satellite. First experience gained from this project was reported at the recent Conference on Computing in High Energy and Nuclear Physics, held in Bologna.

(Photo CERN 438.1.80)