

children and their devoted mother. Why shouldn't he live?

At the break of dawn on the following morning the fighting soul of Doctor Ellison passed quietly over to join his fathers.

The present efficient system of university student health service is the work of Doctor Ellison; his child grown to maturity. To it he devoted a life-

time of skilled, patient and arduous effort. He gave it life and then he gave his life for it. The building which houses that service is the symbol of his success: the emblem of his devotion. In re-naming this building "Ellison Infirmary" the university would at once do honor to itself, to its late physician, and to the ideal of long, faithful and efficient service.

The comet discovery

BY ARNOLD COURT, '32

MAYBE it was just 100,000 years ago, when primitive men were in the beginning of the Stone Age, and maybe it was 2,000,000 years ago, when Model T dinosaurs were being scrapped for Model A mammals with free-wheeling and stream-lining. The exact date cannot be fixed, but sometime between those two extremes there happened in the Carolinas an event whose possibility has intrigued astronomers for centuries. A comet hit the earth—or so two University of Oklahoma professors believe.

From Norfolk, Virginia to Savannah, Georgia, is about 450 miles. The ground is flat, very sandy, and elevated but a few feet above the Atlantic. Much of it is marshy. Throughout the whole territory there are low, long hills, roughly circular or semicircular, enclosing swampy land lower than that of the plain outside the hills. These curious formations have been known ever since the days of Cromwell, when the fleeing English nobility tried its hand at taking the land away from the Indians.

Locally these holes are called "bays." Most of them are between 500 and 8,000 feet across, and with their bounding hills 200 feet wide at the base and only a few feet high, are usually unnoticed by the ordinary man, doing his best to keep out of the ooze. To him there is nothing startling about the formation, because he cannot see all of it.

Back in 1895 one L. C. Glenn described them in a magazine article, and admitted he was at a loss to account for them. Whereupon the world promptly forgot about them—if it had paid any attention in the first place. It remained for two professors in a university which had just then begun operation to point out forty years later the most probable cause of these curious phenomena.

Dr. F. A. Melton, associate professor of geology in the University of Oklahoma, is one of the country's leading au-

thorities in the application of aerial photography to geology. The Fairchild Aerial Survey co-operates with him in the educational phase of this work. In 1930 the Survey brought to his attention a mosaic map of a 200-square-mile area on the South Carolina coast, upon which these bays stood out very strikingly.

Dr. Melton called in Dr. William Schriever, professor of physics, and the two tried to discover the cause of these startling formations. Map study and field trips in June, 1931, and August, 1932, revealed that:

1. The region of occurrence is about 40,000 square miles of the Atlantic coastal plain.
2. The individual depressions are smoothly elliptical in shape.
3. The long axes of all the depressions are parallel, and all run northwest-southeast.
4. Elevated rims completely encircle some of the depressions.
5. An elevated rim is invariably higher at the southeastern end.
6. There is a general increase of ellipticity with size.
7. Double and triple rims exist.
8. Depressions intersect each other; completeness of outline is maintained sometimes by the larger, sometimes by the smaller.
9. The depressions are at least as old as the Pamlico terrace of late Pleistocene age and younger than the Waccamaw formation of Pliocene age.

After trying all sorts of hypotheses, ranging from action of ocean currents to explosions of swamp gas, from prehistoric mound-builders to volcanic explosions, the two Oklahoma professors constructed an intriguing story.*

A big, happy family of rocks was going sightseeing through the sky. Technically, when a gang of rocks, ranging in size from dust particles to objects a couple hundred miles in diameter, goes along

playing tag at 25 or 30 miles per second, astronomers call it a comet. Comets are not solid. Stars can be seen right through them, through their very center. They all shine by reflected light from the sun. Some have tails which also reflect light, some don't.

This particular bunch of rocks was at least 400 miles in diameter, and like everything else running around loose in the sky, was round. They had been by a good many times before, but nobody was home. This time, however, the earth was right in the way, and they just couldn't resist the invitation to drop in. They came in from the northwest, at an angle of approximately 45 degrees. In the four or five seconds it took them to drop through the atmosphere, the air slowed them down quite a bit—from around twenty-five to some five or ten miles per second—and made them quite hot under the collar.

Now when any round body hits a yielding surface from an angle, it will make an oval, or elliptical, hole. And that's what all these rocks, big and little, did when they sat down. They splattered the dirt out on all sides, ploughed on to the southeast a little, and pushed the rim on that side a little higher. The bigger rocks, being a bit harder to stop, made their holes proportionately longer than those of the little fellows.

For the same reason that one rock will leave an elliptical scar, the whole crowd, being also roughly round in shape, will fall over an elliptical area similar in shape and direction to any individual scar. The bigger fellows, having more momentum, will be slowed up less by the air and tend to go to the far end of the ellipse, leaving the little guys to fall ignominiously in the near end. And since the gang is spherical, some will hit after others, distorting, overlapping or partially destroying scars made by their companions a second before.

Scars are found all the way from Savannah to Norfolk, along a line practically parallel with the short axes of the ellipses. In similar territory in Georgia no traces were found, but the territory north of Norfolk is so broken up by bays and rivers that some scars, as yet undiscovered, may exist there. Assuming, however, that the line through the proven area is all there is, and furthermore that it is the widest point of the whole great ellipse, Doctor Melton and Doctor Schriever found that, at the very least, the comet must have covered the area from

*A report of their findings, "On the Possible Meteoric Origin of the Carolina 'Bays,'" was read last Christmas by Doctor Melton before the Geological Society of America in Boston, and by Doctor Schriever before a joint meeting of the American Astronomical Association and the astronomy section of the American Association for the Advancement of Science in Atlantic City. The paper appears in the January *Journal of Geology*.

Charlestown, West Virginia, well out into the Atlantic, some 190,000 square miles. And it is possible that the coastal plain was only one small section of one end of a much greater ellipse—how much bigger no one can tell.

As for anyone who happened to be standing around with his mouth open watching the visitor, well, it was just too bad. Even before the comet hit, the tremendous compression of the air in front of it would have destroyed all life within the area. On the examined part of the coastal plain, almost half of any given area is found to be covered by either a scar itself or its rim. And in addition to heating up the surrounding territory several dozen degrees, the comet probably caused such a rumpus in the old Atlantic that a tidal wave swept around the world and well up into such remote parts as the Australian Bight or the Red Sea.

The geography of the region was much the same then as it is now—after all, what's a million years in the life of a continent?—but since then the old Atlantic swept over the coastal plain for a few thousand years, and then went home again. He pushed much of the rims back into the hole, spread more of it around the landscape, and in addition bashed in the east rims while pushing out the west ones, as can be seen on photographs.

The two professors used a magnetometer to see if there was any unusual amount of iron around the depressions. They found some indications, but it didn't prove anything, they said. In the first place, their tests were not numerous or exact enough to be conclusive; and also, most meteors are ordinary stone, and comparatively few have the nickel-iron mixture which was once thought to be the trade mark of a new arrival.

That many other comets may have hit the earth in the past is a possibility opened up by this find. Before, it was thought that a comet would leave indelible traces, obvious and unmistakable until the end of time, but the fact that men have been living on these marks for some 250 years shows otherwise.

Hitherto Meteor Crater, Arizona, was regarded as the world's largest interplanetary calling card, but whereas it is only about 4,250 feet long, several Carolina scars are all of two miles, disproving for once the theory that out west everything is bigger.

No craters or scars have been found in the tentative ellipse outside the long coastal strip, but erosion would no doubt make life very hard for any such X-marks-the-spot except on the flat coastal plain. Careful aerial maps might show some, but no one has yet seen fit to make such maps, and until they are made, the Uni-

versity of Oklahoma faculty members feel that they have done all they can to prove their theory.

One indisputable fact, however, comes to their support. More meteoric material has been found in the southern Appalachians than anywhere else in the United States. In fact, the density of finds there is several times that anywhere else in the country. And the area is squarely within the ellipse.

Anthropology--what's that?

BY FORREST E. CLEMENTS

IF all the people who have asked that question were laid end to end (and sometimes I've wished it could be done) they would reach nine times around the moon with enough left over to bridge the South Canadian river. These are those persons who have never before heard of the subject. Still others have a vague idea that anthropology is in some way connected with savages and often regard it as mainly concerned with the description of outlandish races and queer, exotic customs in far away parts of the world.

Actually, of course, it is nothing of the sort. True enough, ethnology, which is a branch of anthropology, does study primitive people and because many such people differ from ourselves in both physical appearance and customs they strike us at first as exceedingly queer. But an Oklahoman would seem just as queer to an Andaman Islander.

As a matter of fact, anthropology is the study of man and the cultures which he has created. Culture in this sense has a meaning quite different from that popularly employed. To many people culture means refinement—proper table manners, an appreciation of art, music and so on. The anthropologist and social scientist, however, use the term to mean all the habits, customs, beliefs, arts and practices which are acquired by man as a creature of society. The term civilization could be employed were it not for the fact that this word carries a connotation of value. We speak of civilized nations as opposed to savages or primitive peoples and it would seem odd to refer to the civilization of African bushmen or the natives of Tierra del Fuego. The word culture implies no such valuation and we can think of French or English culture and that of the Austral-

ian aborigines without our terms carrying any judgment as to whether or not one is more complex or "higher" than the other.

Anthropology, then, is the study of human culture. It attempts to trace the history of culture and to understand how cultural changes come about.

Given our basic biological equipment, culture is undoubtedly the most powerful conditioning force which acts upon us. Almost literally, it is culture that makes us what we are. When a baby is born into the world it is culture which determines what language he shall speak, what he shall believe, what he shall do. His cultural environment, acting on him continuously from birth until death, molds him to a particular pattern. It determines whether he shall be a Methodist or a Baptist, a Mohammedan or an atheist. If he turns into an aviator or a miner or a stock broker, the reason is to be found in cultural influences which have reacted upon him. All his beliefs, his activities, the very way he thinks, in short, all that makes him a social being rather than an animal is derived from his culture.

In other words, although man has originated culture, he not only does not control it, but is largely the puppet of his own creation. He is borne along on the stream of culture change and development like a chip in a river and exerts as little influence on his destination as does that chip. It may be that man is cast in the rôle of Frankenstein whose creation ultimately destroyed him.

The physical sciences have developed rapidly in the last five hundred years, and their discoveries have enabled man to exercise a certain amount of control over his physical environment. We no