

Repairing Broken Bones

A&M Engineers May Aid Surgeons



BONE STUDY AT A&M

Dr. Douglas Bynum, Texas A&M structural engineer, looks over an array of horse bones used in a study to design better plates and fastening devices to repair badly broken bones in humans.

Texas A&M engineers think they can help surgeons do a better job of repairing badly broken bones.

Specifically, the engineers believe they can design better plates and fastening devices to hold damaged bones together. Until now, this has been strictly an orthopedics function.

"If you want to look at it coldly," Dr. Douglas Bynum points out, "the bone is just another structure."

Being a structural engineer, Dr. Bynum decided to explore the field of internal fixation plates—objects actually screwed to the broken parts of the bone in compound fractures. He discovered very little research has been conducted in the field.

Dr. Bynum has been joined in the project by Dr. W. B. Ledbetter, a civil engineering professor specializing in materials research; Dr. C. L. Boyd, veterinary medicine and surgery professor, and D. R. Ray, an engineering graduate student. Baylor College of Medicine is cooperating in the project.

"In casual conversation with various medical people, I discovered engineers could play an im-

portant role in the orthopedics field," Bynum recalls.

He stresses, however, some of the ideal engineering solutions do not lend themselves to medical use.

One of the A&M researcher's first conclusions was that present bone plates are "overengineered."

Almost all of today's plates, Bynum notes, are made of stainless steel and are too rigid. Experiments have shown the bone is 15 times more flexible than the plate.

Bynum and his associates are experimenting with reinforced Fiberglas as a possible superior substitute. In addition to being more flexible, Fiberglas is twice as strong as stainless steel and less expensive.

A Fiberglas plate was implanted in a horse's leg last month to check for "body rejection."

"He (the horse) is doing beautifully, so far," Bynum reports.

Horse bones are being used exclusively in the research project because of their similarity to human bones. Severe restrictions are placed on experiments with human bones.

"When we get to 'people problems,' we'll be working directly with Baylor Medical," Bynum emphasizes, "but we can get a bunch of these problems checked out with animal experiments."

As for the screws which hold the plates to the bones, Dr. Bynum thinks they may hold too well.

"The fastening devices now strive for the maximum holding force," he explains, "but when they fail, the bone shatters."

A&M researchers are exploring a solution in which the fasteners would "give" under less pressure, but the resulting damage could be more easily repaired.

A&M officials are hopeful the project will receive federal assistance, but so far it has been totally supported by university funds provided by the state.

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Houston 1970 Murder Rate Over Twice That of 1969

HOUSTON (AP)—Houstonians were getting killed at the rate of more than one a day and homicides continued at more than double 1969's record-breaking pace Tuesday.

Three persons were shot to death.

Meanwhile, sheriff's deputies investigated a strange death late Tuesday near the Harris County-Fort Bend County line. The body of a middle-aged man, unidentified, was found in his car, shot through the chest with a small caliber bullet.

James Brantley, 16, was shot and killed Tuesday night outside an apartment house in the climax to an argument. Police held another participant in the argument, also 16.

Earlier, a lone robber killed the owner of a drive-in grocery as the two men fought in front of the store. Normal Alford was shot three times in the chest.

His wife told police the gunman came into the store and forced her husband outside at gunpoint. When she tried to help her husband, she said, the gunman broke away and began shooting.

Gene Gaines, 19, was killed and a teen-age girl critically wounded Tuesday. Gaines was shot twice in the back of the head, apparently as he slept at his home. The girl was taken to a hospital with a gunshot wound behind her right ear.

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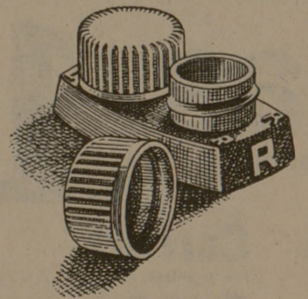
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