

PHYSICS

Scientists "Play" Golf

► SCIENTISTS are playing golf in the laboratory.

The scientists, who want to help all golfers from the professional to the duffer, are studying how a golf ball behaves. Their results so far include the following:

1. The most consistent thing about a good golfer is his swing: the velocity of his club at the bottom of a swing does not vary significantly.

2. There is much more variation in ball velocity, which seems to depend more on how squarely, rather than on how hard, the ball is hit.

3. The important factor for distance is the angle of the ball's elevation, and the best angle appears to be 11 or 12 degrees above horizontal.

4. For a well-hit ball, there is a fairly close correlation between the total length of the drive, including final roll, and the velocity of the ball when it leaves the club.

5. The hardness of a ball, within certain limits, has little effect on driving distances. Photographs of a golf ball at time of impact show that a softer ball is flattened out more and stays in longer contact with the

club than a harder ball. Better control can thus be achieved and the soft ball will require less critical accuracy of impact than the hard ball.

The scientists' studies were undertaken because the standards of performance for golf balls have remained unchanged for the past 16 years. The United States Golf Association Rules specify a test in which the ball shall not travel faster than 250 feet a second. If the ball were much livelier, golf courses would tend to lose their challenge to the player.

Although the Association has a test machine and periodically checks balls of all makes, it would prefer a portable machine to test balls at championship tournaments. The studies so far have shown that the velocity limit of 250 feet per second corresponds to a 250-yard drive, probably a well-chosen value to represent the performance of a superior player.

The studies of golf ball behavior are reported in the *Industrial Bulletin*, published by the Arthur D. Little research company, Cambridge, Mass.

Science News Letter, June 28, 1958

ARCHAEOLOGY

Find Skyscraper Temple

► A PREHISTORIC skyscraper temple, as tall as a modern 20-story building, has been snatched from the engulfing growth of the jungle in Tikal, in the northern El Peten region of Guatemala.

This impressive stone building is one of scores of temples, palaces and other structures in a pre-Columbian Mayan ceremonial center which may date back as far as 500 B.C. It was one of the most densely populated regions between 300 and 900 A.D., the Maya classic period.

Evidence of temple desecration and violence in those early days has been uncovered. Digging down into the collapsed masonry filling three rooms in the Temple of the Red Stela, Dr. Edwin M. Shook of the Carnegie Institution of Washington, field director of the expedition, found the smashed bottom half of a beautifully inscribed monument. The monument had evidently been deliberately broken. The top half was missing and a crude masonry altar had been built over the fragments, possibly to hide them. The lower portion of the stela contains some of the most beautifully carved Maya hieroglyphics yet discovered. The entire carved front and sides had been painted a brilliant red.

Evidence was found that after many years, people tore into the crude altar, built fires and smashed pottery over the debris.

Tikal is an early example of formal city planning and contains an elaborately constructed network of graded roads linking the central area with outlying districts.

Tikal is being salvaged from the inroads

of the tropical forest and restored as a tourist attraction by archaeologists of the University of Pennsylvania Museum in cooperation with the Guatemala government.

When Tikal was rediscovered about a century ago, the site was accessible only by mule-back. Now tourists are flown into the area on twice-weekly flights at the rate of 1,000 a year.

Science News Letter, June 28, 1958

MEDICINE

Oral Diabetic Drug Only Partially Helpful

► THE ORAL DRUG that freed many diabetics from the bothersome insulin shot routine has proven useful to only a select and limited group.

The results of a 20-month study of tolbutamide (Orinase) indicates the drug works best in middle-aged and elderly diabetics who would otherwise take relatively small doses of insulin.

The study substantiates a warning published one year ago in the *American Medical Association* journal stating, in effect, that tolbutamide is not a substitute for insulin and could be used only in certain types of diabetic patients.

The 20-month study included 1,030 diabetics, all of whom were given tolbutamide. Of these, 288 were immediately eliminated from the study because they needed insulin to control their diabetes, or because it could be controlled by proper diet.

The remaining 772 patients were composed almost entirely of middle-aged persons with maturity-onset type diabetes. In addition, they had formerly been using insulin in dosages of about 20 units or less daily.

Eight of the 772 experienced toxic side effects ranging from skin rashes to heartburn. The results show the incidence of toxicity to be extremely low. Therefore, the doctors said, the chief problem is not the fear of toxicity from tolbutamide, but rather, the effects resulting from administering the drug to patients whose diabetes cannot be controlled by tolbutamide.

Good control of blood and urine sugar levels was obtained in 407 and fair control in 143 of those who were switched to the drug. The remaining 222 were classified in various "failure" groups, that is, patients who, for one reason or another, did not maintain the criteria of the study.

In conclusion, Drs. Hellmut Mehnert, Rafael Camerini-Davalos and Alexander Marble, Boston, warn in the *Journal of the American Medical Association* (June 14) that:

"In the selection of patients to be treated with tolbutamide, care should be taken to avoid, on the one hand, unnecessary use in those with whom dietary restriction will suffice and, on the other hand, unwise use in those requiring insulin for maintenance of control of diabetes."

Science News Letter, June 28, 1958



ITALIAN REACTOR—Technicians of *Atomics International, North American Aviation, Inc.*, fit precision milled graphite reflector blocks around the "core" of the 50-kilowatt nuclear research reactor being built for the *Enrico Fermi Nuclear Study Center in Milan, Italy*. The core, which will contain uranium in a water solution as fuel, is upside down for easier assembly. The reactor will be used for research and training in nuclear and associated fields.