Measuring by Light

Methods by which diameters of stars have been measured have been applied to the measurement of terrestrial distances with very high precision by Stuart H. Chamberlain, at the Michigan State College, East Lansing, Mich. In a report to the American Physical Society, he describes the method which makes use of the interference of light waves.

When a beam of light is separated into two parts and recombined under the proper conditions, a series of light and dark bands result, called interference fringes. Variation of as much as a small fraction of a wave length of light in the distance traveled by one of the parts causes a perceptible shift in the bands.

In the instrument developed by Mr. Chamberlain, a parallel beam of light is divided into two parts which, slightly separated, converge towards a mirror at the distance to be measured. This reflects them back to the observer, where they are combined by a prism and the fringes are seen in a telescope. Counts of the numbers of the dark bands tell the distance between the light source and the mirror.

Physics

Science News-Letter, March 15, 1930

Mine Rescue

One mine rescue station has already been established and two others will be created in the chief mining districts of Ontario following legislative action, D. G. Sinclair, chief inspector of mines for Ontario, told the Canadian Institute of Mining and Metallurgy at its annual meeting.

These stations come as the result of governmental investigation of the Hollinger mine fire in 1928, which took 39 lives.

Experts now teach miners modern rescue methods in the rescue station already established at Timmins. It also contains apparatus for fighting underground fires, including self-contained oxygen-breathing apparatus, gas masks, an inhalator, oxygen and carbon monoxide detectors, etc.

Safety

Science News-Letter, March 15, 1930

Free Entry

Special European manufactured scientific instruments, the like of which are not made in this country, will probably be available to schools and colleges without payment of duty after the passage of the new tariff bill.

An amendment offered by Senator Robert M. LaFollette of Wisconsin to the free schedule was accepted by the Senate and no difficulty is seen for its final acceptance by both Houses.

The LaFollette amendment provides for free entry to this country of "scientific instruments, apparatus, and devices of a kind not offered for sale in the United States by domestic producers, and imported for research purposes by any college or university, and not for sale." A further requirement of the amendment provides for such free entry under rules and regulations to be prescribed by the Treasury Department.

Senator LaFollette stated that the amendment as originally introduced and printed provided that any instrument imported for research or scientific purposes by a college or university should come in duty free. American manufacturers objected to that, and their contentions were upheld by many Senators, the consensus being that where good instruments of American manufacture can meet the needs of research work in this country, these should have the advantage which a tariff gives.

Senator Reed Smoot of Utah, chairman of the Senate Finance Committee, and in charge of the tariff bill in the Senate, explained the abuses to which free importation of scientific equipment for colleges were put after passage of the 1913 tariff act.

He said that colleges would import in quantity and sell to students or others. Half of the scientific instrument importations of the United States came in duty free after 1913, he declared.

He believes that the LaFollette amendment will obviate any such difficulty as that, particularly if the Treasury Department is able to outline good rules and regulations for administration of the provision.

Tariff

Science News-Letter, March 15, 1930

Rome on the Rhine

A complete picture of how Roman life was lived on the borders of Germany twenty centuries ago has been obtained as the result of excavations conducted by the Wallraf - Richartz Museum of Cologne, under the leadership of Dr. F. Fremersdorf. Although many hundreds of Roman villas have been discovered and partly excavated in Germany and France, the one explored by the Cologne institution is the first that has ever been worked over completely.

The original structure, which is for convenience called the "manor house," has a front of about 150 feet, and contains some 30 rooms. Its interior

IN VARIOUS

was partly sheathed with marble and partly in fresco. Literally thousands of broken pieces of these decorations have been brought to light.

Around this manor house there lay in a half-circle, fronting towards the east, eleven farm buildings of various kinds. All these remains have been investigated thoroughly, and the use of each one is now known. The museum workers have also discovered the deep spring that supplied water for this large farmstead, and dug it out to a depth of about 70 feet.

To the west, in front of the manor house, lay a large park, and the whole establishment was surrounded by a wall. In front of this wall, at the east, was a graveyard, in which during the first and second Christian centuries the cremated remains of the dead were laid away. More that fifty graves have been opened and investigated.

In addition to these there were a series of burials of late Roman time, in heavy stone sarcophagi. These yielded a series of remarkable funeral gifts of iron, bronze, silver, glass and pottery. Especially noteworthy are a series of bronze vessels which are regarded as the prototypes of the Frankist types of post-Roman times. Among the glass finds the most striking is a dish about six inches in diameter, made of clear glass. This has a lively picture of a rabbit hunt engraved upon it. It was taken out of the tomb completely undamaged.

In the midst of these funeral gifts there were two large silver spoons bearing the Christian inscription *Deo gratias*—"Thanks be to God." These cast a sharp light upon the transition from paganism to Christianity at the end of antiquity.

Archaeology

Science News-Letter, March 15, 1930

Prison Riots

Strict laws of the Baumes type, meting out life sentences to fourth offenders regardless of the severity of the crime committed, are held responsible for the recent prison riots in a statement just issued by the National Committee for Mental Hygiene.

The resort to such severe measures as a weapon against the crime wave is compared, in the report, to the futility of fighting yellow fever by devising an ideal sort of rifle and setting out to shoot mosquitoes.

"Through such laws," the statement continues, "society strikes blindly at

SCIENCE FIELDS

the crime problem, with little more intelligence than that of the 'lifer' making his desperate attempt to escape, and with the same futility so far as the gaining of ends is concerned. . . .

"Psychiatrists have long advocated the procedure involved in the true indeterminate sentence whereby an habitual offender may be detained in prison, correctional institution or hospital, for an indefinite period of time pending determination, after careful study and treatment, as to his capacity for readjustment to a law-abiding community life. The adoption of this principle along constitutional lines would achieve the aim of the Baumes law, though with a more discriminating justice, and at the same time would leave the way open for true reformational work with those capable of profiting by it."

Criminology
Science News-Letter, March 15, 1930

6-Foot Nest

When the storks of the village of Grünewalde fly north from Africa this spring they will find their old home on the schoolhouse, but they will hardly know the place. For the schoolhouse had to be reconditioned during the winter, and the nest had to be taken down. This incidentally gave naturalists a chance to examine a storks' nest of championship proportions, before putting it back on the roof.

The nest was over six feet in diameter and not much less than three feet high, larger by half than an ordinary storks' nest. It could contain four men sitting on chairs around a table. Sticks as thick as an arm had been built into its walls, and the interstices filled with moss, straw, hay and reeds. In odds and ends of space not needed by the storks upwards of 50 sparrow families lived.

Ornithology
Science News-Letter, March 15, 1930

May Erupt

Mt. Shasta, in California, and many of the other supposedly "extinct" volcanoes in the northwestern United States "might erupt at any time," stated Dr. T. A. Jaggar, director of the Hawaiian Volcano Observatory. He made this statement to controvert what he called the "Lassen myth" that Mt. Lassen, also in northern California, is the only active volcano in the continental United States.

"Geologists have long known that the volcanoes of the northwest are potentially active," he said. "Tradition has it that Mount Saint Helen's and Mount Baker have both had eruptions in historic times. The Cinder Cone east of Lassen was well known to the Indians and to geologists as the maker of a modern lava flow within a century. Eighten volcanoes lie along the Cascade fault in Oregon, and many more extend north through Washington into British Columbia. At Geyserville just north of San Francisco there is rushing volcanic steam under high pressure. This was in the epicentral belt of the San Francisco earthquake."

The fact that there is no record of eruptions of such volcanoes as Mt. Shasta is no proof that they are extinct, said Dr. Jaggar.

"Intervals between outbreaks are long in continental volcanoes of this class," he declared, "and the white man's history is short."

Volcanology
Science News-Letter, March 15, 1930

Prehistoric Murder

A prehistoric American murder mystery has been unearthed near the Great House, Casa Grande National Monument, by members of the Van Bergen-Los Angeles Field Party, engaged in excavating an ancient Indian village.

The skeleton of an adult, apparently a young woman, was found lying in the center of the room, surrounded by shattered water-jars and cooking pots and bowls. All about were charred roof timbers, and carbonized carrizo stems, remnants of the material used for thatching the roof and sides of the house. The position of the skeleton clearly indicated violent death. Beside it lay the blade of a hoe made of slate.

In a corner of the room were an assortment of bones representing the lower limbs of another individual. Most of these bones were charred by fire. Body and head were missing.

Archaeologists who viewed the room concluded that hostile Indians swooped down on the isolated little house, slaughtered the unfortunate inmates and set fire to the thatch, leaving the bodies to burn with the house. After the ruins cooled, coyotes probably dug through the mass of earth which had been the roof covering and made a meal off the former owners of the place. The appearance of the pottery in the house indicates to experts that the alleged killing took place about the ninth century A. D.

Archaeology
Science News-Letter, March 15, 1930

Manhood?

Boys beating each other with sticks until pieces of skin came loose, yet grinning and pretending to like it, were among the weird sights seen in the heart of Africa by W. D. Hambly, leader of the Frederick H. Rawson-Field Museum ethnological expedition which has just returned from a ten-thousand-mile trek through hitherto unexplored or little-known parts of the continent.

The tribe whose flagellation ceremony Mr. Hambly witnessed carries out this terrible rite only once a year, and then in disobedience to government orders. Each boy has to submit to a severe beating with a thick, supple stick wielded by a lad of his own age, to prove his manhood. The beating continues until strips of skin are torn off. The dazed victim is expected to smile and begin dancing. Later, he gets an opportunity to give another boy a similar thrashing. Crowds of girls attend this ceremony, for it is one of the preliminaries in the selection of a wife.

Some of the other tribes visited by Mr. Hambly are extremely primitive, wearing not a vestige of clothing. Murder and cannibalism are commonplaces of their lives. Self-mutilation and sacrification, either for religious purposes or to promote "beauty", he found to be widespread.

The expedition yielded rich returns in objects of all kinds used by the tribes in their religious rites, their warfare and their daily lives. Over 2,000 specimens were collected. There are also many motion pictures and still photographs showing native life, together with dictaphone records of the music and languages of some of the tribes.

Among the bodyguard of one tribal ruler Mr. Hambly found a man wearing a suit of chain mail, said to be a relic from the times when disbanded crusaders straggled from Palestine into North Africa.

Ethnology
Science News-Letter, March 15, 1930

Limestone in Bearings

Just as crushed rock is mixed into concrete, so small pieces of limestone are added to molten bearing metal to form a conglomerate which is in successful use in tramcars in Germany.

The theory of this revolutionary procedure is that the limestone acts as a sponge and absorbs the oil.

Engineering
Science News-Letter, March 15, 1930