

prehistoric animal was about three times the size of the modern bison.

Its remains were uncovered by Burnett Day, a thirteen-year-old youth, who in attempting to pick up a rock to throw at some sheep, grabbed hold of what proved to be the tip of the bison's horn, which protruded a few inches above the ground.

The giant bison, Dr. Camp says, belonged to the great "climax" animals of the Pleistocene geologic period. It was contemporary to the saber-toothed tiger, the ground sloth, the Columbian elephant, and others of huge bulk. They reached what scientists term the climax in development, and then suddenly and mysteriously disappeared from the earth.

Science News Letter, January 20, 1934

ENTOMOLOGY

Minute Duckweed Infested By Even Smaller Insects

THE TINY plants of duckweed, that form living blankets on stagnant ponds, are visited and inhabited by insects correspondingly tiny, Dr. Minnie Brink Scotland of the New York State College for Teachers, Albany, recently reported to the Entomological Society of America.

There are six dominant insect forms, including a bug, an aphid, a beetle and a fly. One caterpillar is bigger than the individual plants it uses, but by binding them together in a raft it makes them serve its purpose.

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CALLING CARDS OF A NATION'S CRIMINALS

Information and fingerprints concerning thousands of criminals are kept in this regular file of fingerprints of the U. S. Identification Unit. When an arrest is made or a suspect picked up, his fingerprints are rushed to Washington, where a few minutes' search in this file will reveal his past record.

CRIMINOLOGY

Racketeer File and Statistical Machines Aid Fight on Crime

SCIENCE and the most modern business methods are serving as powerful weapons in Uncle Sam's new drive on organized criminals, kidnapers and racketeers. One of the most useful of these new defenses is a newly organized file at the Identification Unit of the U. S. Department of Justice.

In the drawers of this file are the fingerprints of known gangsters, kidnapers and extortionists—each single fingerprint filed separately. The advantage of having each finger filed separately, instead of in sets of ten as in the regular identification files, is that the search for a single print picked up at the scene of the crime, or found on a ransom note, perhaps, is made much easier by this system.

Suppose one print is found on one side of a sheet of paper or a bottle, and on the other side are noticed four smudges. Officials receiving this print may assume first that it is a thumb. Right thumb prints are filed all together in this new single-print file; but not all are of the same pattern, and they are classified and filed by pattern, not by the criminal's name.

Perhaps the "latent" print found on the paper has what is known as a loop

pattern. That narrows the search to the loop classification. The direction the loop points, whether toward the little finger or away from it, indicates still another sub-classification. The number of ridges in the loop limits the search still further. Finally, the particular section which must be searched for that type of print contains not more than about 25 cards. If not found there, the search would be continued among the left thumbs, and so on.

It is a comparatively simple task to search a bunch of 25 cards one by one until the "latent" print is identified. It would be a hopeless task to search the millions of prints in the regular files.

Sorting and Punch Cards

Statistical sorting machines and punch cards familiar in business have also been enlisted by the Federal Government's Department of Justice detectives.

As an auxiliary to the new single-print file of fingerprints of racketeers the Identification Unit is now keeping a detailed descriptive file of such criminals. Since names mean less than nothing among criminals, the index to this file is the description of the men. And this index is kept in a comparatively novel way. It is punched on the cards used in sorting machines for statistical work. A hole in one location means blue eyes, in another brown eyes, and so on. Height, weight, age, sex, scars, deformities, and peculiarities of speaking are some of the items recorded on this punch card.

Contact Man Usual

A fortunate aspect of some crimes, including kidnaping, is that there is usually some contact with at least one member of the gang, either at the time of the abduction, when the ransom is paid, or at some time during the negotiations. If a clear description of the person is sent immediately to the Department of Justice, within a few minutes the punch cards can be run through the sorting machine and all known offenders answering to that description selected.

The file records, including photographs and record of offenses, can then be shown to the person who has seen the criminal for positive identification.

The kidnaper's curt demand for payment often becomes a boomerang leading the detectives directly back to him.

For the ransom note is an important clue in the solution of such crimes. It may be that fingerprints can be brought out by special treatment of the paper. Examination under a microscope often reveals defects of paper or watermark through which the paper can be traced to the locality where it was purchased by the extortioner. The microscope may also reveal stains or particles of dust, the nature of which may indicate something of the letter's history.

Handwriting Reveals

And even though the letter is unsigned, the expert can find clues to identity in the handwriting itself. Although Uncle Sam's handwriting experts do not rely on the idea that personality is revealed by handwriting, they do know from experience that much can be learned about the individual from this source.

Nationality is one of the facts revealed by handwriting. The German, the Austrian, and the Italian are betrayed by tiny peculiarities in the formation of letters, which would be unnoticeable to you, but which are noted immediately by the expert's keen eye and microscope.

Age is another item which can be estimated by the expert examining handwriting.

Diseases sometimes show up in handwriting, especially nervous diseases. And if the note is written on the typewriter, the extortioner is but little better off. No two typewriters produce exactly the same writing, and the expert has learned to trace machines with uncanny accuracy.

Science News Letter, January 20, 1934

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WHAT X-RAYS CAN TELL US ABOUT ATOMS

an address by

Prof. S. K. Allison
of the Ryerson Physical Laboratory,
University of Chicago

Wednesday, January 24, at
4:30 p. m., Eastern Standard
Time, over Stations of
the Columbia Broadcasting
System. Each week a prominent
scientist speaks over
the Columbia System under
the auspices of Science
Service.

PSYCHOLOGY

Steadiness Tests May Pick Marksmen Before They Shoot

Likelihood of Advance Choice Indicated by Tests in Which Expert Riflemen Excel Others in Muscular Coordination

EXPERT riflemen of the University of Oregon R.O.T.C. unit greatly excelled all other students examined in a series of muscular coordination tests given at Eugene, Ore., recently, and so positive were the results that University psychologists see in the experiment a new and efficient method of selecting men for expert marksmen, it was announced by Dr. Robert H. Seashore, associate professor of psychology, and Raymond D. Adams, his assistant.

The results showed that but one person out of sixty examined equalled the record made by members of the rifle team in a series of five tests. Musicians, draftsmen and athletes, as well as a number of men selected at random, made up the group. Additional experiments carried out with the riflemen indicate that the actual training in rifle shooting itself was not the major factor in accounting for the superiority shown by team members. Intensive practice in the tests themselves, carried on over a period ten times as long as the standard time, produced an amount of improvement which would account for only one-fifth of the total range of individual difference.

The university scientists now plan, as a crucial test, to select from men wholly untrained in rifle shooting one group showing superiority in these tests and another showing average ability. Both groups will then be given the same training in marksmanship. If the selected group shows a marked superiority in actual rifle fire, it is believed that a standard test can be devised that will eliminate the costly practice methods now used to select men for training. Savings in ammunition by armies, military schools and other organizations would be tremendous.

The five tests given included the Miles ataximeter for measuring postural sway, the Beal and Hall ataxiagraph for photographing tremor movements of the arm, a steadiness test apparatus devised by the University men for measuring accuracy in thrusting and

in arm steadiness, and a fifth test that records the actual sway of the rifle in shooting position.

A common factor of steadiness, quite unexpected, was found in the tests. Most motor tests, such as those for speed, are unrelated, the scientists pointed out. The rifle team and athletes were superior to the unselected group in every test, while draftsmen and pianists were superior in all but the ataxiagraph test.

Dr. Seashore is well known in psychological research fields for his previous work on motor coordination. Testing apparatus he has devised is now widely used in psychological laboratories.

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PLANT PATHOLOGY

Virus of Plant Mosaic Concentrated in Protoplasm

EVIDENCE that the invisible, filtering virus that causes mosaic disease in tobacco is concentrated in the living protoplasm of the cells, and not in the watery contents, or cell sap, has been obtained by Prof. B. M. Duggar and Dr. L. G. Livingston of the University of Wisconsin.

They used a special apparatus with microscopically slender hollow points, to penetrate certain large hair-cells on the surface of tobacco leaves and extract various parts of their contents—an almost incredibly delicate operation. The virus seemed not only to be concentrated in the protoplasm, but to be especially strong when the cells contained special structures known as "inclusion bodies," which can often be demonstrated when the disease is present in the plants.

"It is suggested," said Prof. Duggar, "that the inclusion bodies at least accompany the development of the virus agency in high concentration. Clear demonstration was obtained that the inclusions are fragile structures, readily breaking into granules when touched with the micropipette."

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