of such gestures, or of objects, just as they recognized gestures of a real person.

Ivory bow-drills, used in boring holes and in fire making, were so elaborately covered with neat rows of this picture writing that they became veritable books, on which sagas of exploits were told.

An outstanding usefulness of the writing, cited by the French scientist, was for visiting cards. Eskimo visiting cards were left for visitors—not by them. When a tribe vacated its winter village for the summer one, for example, it might leave a posted plaque engraved with instructions for following the group. Often the visitors who came were stranded travelers, or relatives driven from their own homes in some famine. Reading and writing were thus matters of life and death.

M. Leroi-Gourhan believes the Eskimos have been taken for granted as poor primitives whose disappearance would mean nothing to human civilization. Their ancient art recently surprised archaeologists who unearthed fine examples. Now they are candidates for new honor, as men of letters.

Science News Letter, July 24, 1937

PHYSICS

Scientists Study Disorder to Learn of Structure of Solids

A FEW years ago when scientists gathered to discuss the possible structure of solid matter they dwelt in great detail on the orderliness of things. Now, however, they are studying the disorder of matter as a key to its structure, it was revealed at the symposium on the structure of metals held at Cornell Universtiy.

Crystal structure, with its regular arrangement of atoms is now fairly well understood, Prof. John C. Slater of Massachusetts Institute of Technology indicated in his introductory remarks to the highly technical sessions. But the more scientists study real solids like metal alloys the more they find them differing from the idealized crystal states that they can interpret so well.

Thus, said Prof. Slater, the emphasis is on studies of disorder. In fact, the mathematical physicists have introduced a new concept into their calculation, the degree of order or disorder which a given material may have. This searching for knowledge in chaos, as it might be termed, complicates the discussion of phenomena and increases mathematical difficulties but it has had the net effect of finding out more about solid structure. In analogy mathematics has called up additional symbolic reenforcements as the going became harder.

In solids it appears, indicated Prof. Slater, that there is both a long range and a short range order. "These terms mean," he added, "essentially just what they say: a structure shows long range order if each part fits into a pattern extending through the whole structure, while it shows short range order if each atom is surrounded by neighbors in a regular way, though the regularity may not persist for a very large distance."

This is like saying that a town would exhibit long range order if all its dwellings (as in some older company-owned mining town) were made alike. Short range order, by the same picture, would show a series of what might be called sub-divisions, within which all the dwellings were alike, but differed from region to region.

Advantage of the new concept of order and disorder, said Prof. Slater, is that it permits scientists to discuss mathematically, and predict, phenomena in which the atomic particles are not in equilibrium with one another. Thus the great branch of physics known as thermodynamics is extended to new usefulness, for thermodynamics, highly valuable though it is, can apply only to equilibrium conditions.

And yet in real life and real things like alloys of metals the idealized equilibrium conditions seldom exist. Alloy steel, for example, may be in equilibrium when it is made at high temperatures, but equilibrium may not then exist at room temperatures, where it is used in practical life.

Besides Prof. Slater the following scientists participated in the symposium: Dr. J. G. Kirkwood, Cornell University; Dr. F. C. Nix, Bell Telephone Laboratories; Prof. E. R. Jette, Columbia University; Prof. R. F. Mehl, Carnegie Institute of Technology; Dr. F. Seitz, General Electric Company; Prof. Francis Bitter, Massachusetts Institute of Technology; Prof. L. W. McKeehan, Yale University; and Dr. R. M. Bozorth, Bell Telephone Laboratories.

Science News Letter, July 24, 1937

PHYSICS

Movies With Color, Speed, Depth and Sound Aid Science

MOVIES to the millions mean entertainment. But they are also becoming a most useful tool of science.

As new dimensions of cinemagraphic sight are developed, usually under the primary incentive of making the movies more startling and interesting, scientists apply them to their researches.

Color, now relatively easily obtainable in amateur or 16 mm. film, is allowing operations to be recorded in faithful reproduction and with more fidelity so that future surgeons can study and view repeatedly the best techniques. Flowers, animals and insects, chemical experiments with color reactions and a thousand other happenings are now captured in color as a record and for later study.

Perspective or depth in movies promises to be added to color in the near future. This is accomplished by taking two stereoscopic pictures simultaneously by polarized light of two different orientation and then viewing them with the aid of glasses that sort out one kind of light for one eye and the other for the other.

X-rays have been wedded to the movies. Not only the common variety used in medicine and industry are used for X-ray movies, but softer rays allow scientists to record the internal workings of creatures too delicate in structure to be caught by the ordinary hard X-rays. An X-ray view of a worm's digestive process was recently filmed at Rochester.

Slow motion pictures allow the dissection of what happens in less than the wink of an eye. High speed cameras with film moving 70 miles per hour and taking 1500 pictures a second (ordinary movies are about 16 per second) are in almost routine use in ballistic and other researches.

And movies, both sound and silent, give psychologists an undisputable way of recording the results of the experiments whether they are on monkeys or babies.

Science News Letter, July 24, 1937

MEDICINE

North Carolina Quintuplets Diagnosed by Use of X-Rays

THE North Carolina quintuplets, prematurely born last November but who died at birth, will go down in medical history as the first quintuplets ever diagnosed as such before birth.

An X-ray picture was taken of the mother when she entered the Duke Hospital, Durham, to have her baby. The film showed four heads and five bodies.

Next day the babies were born and, like the Dionnes, all were girls. Four were normal, and the fifth was a headless freak. Two of the babies survived as long as 30 minutes.

Now physicians throughout the country will for the first time read and argue over this quintuple pregnancy, which brings the total of reported quintuplets in all medical history up to 35.

Once in 40,000,000 births is the expectancy of quintuplets.

Not only were the North Carolina births the first instance of a diagnosis of quintuplets being made prior to delivery, but because the babies died in a hospital it was possible for the physicians to make a complete anatomical study of the fetuses, placenta and membranes.

Drs. E. C. Hamblen, R. D. Baker and G. D. Derieux report the case and their findings. (*Journal, American Medical Association,* July 3.)

What will provoke the most discussion among physicians, upon reading this report, is whether these babies sprang from one egg cell or from several. Were they identical or were they not?

The Duke Hospital doctors are themselves perplexed, after presenting all their findings, but are inclined to the opinion that the five babies may well have been derived from a single ovum.

Science News Letter, July 24, 1937

Pollen from some fruit trees can be kept in cold storage for several years, for use in crossing fruit varieties.

A physician has invented an instrument similar to a stethoscope, with which he can detect simultaneously various body sounds indicating disease conditions.

DENDROLOGY

NATURE RAMBLINGS

by Frank Thone

Pedigreed Trees

PEDIGREED cattle graze in the farmer's pasture, pedigreed grains grow in his fields, pedigreed fruits ripen in his orchard. Far removed from Neolithic Europe, or pre-Columbian America, are stock-raising, agriculture, horticulture.

But in the farmer's woodlot are trees no whit different from those his ancestors knew in the foggy forests of Saxony and Britain. Our timber trees are wild trees still, even when we plant and tend them. Alfred or Charlemagne would stare in wonder at what we have done to wheat and hogs in a thousand years—But Adam himself would recognize our oaks and pines unchanged.

It is natural that we should have thus neglected to breed improved timber trees. We domesticated wild animals, crop plants and fruits, only when the wild kinds began to become more difficult to obtain. And we early learned that by increasing size and abundance of yield per unit we could get our daily bread with less work.

But it has been easy to gather wild trees. Vast virgin timber stands still exist, but accessible ones have been badly depeleted.

So we are giving thought to future timber harvests. We still plant wild trees; but breeding for improvement is already being undertaken. Hopeful experiments have been under way for some time in New York, California, and elsewhere.

Newest project is a program of tree genetic and physiological researches provided for by a $615,000 endowment at Harvard University, the Maria Moore Cabot foundation. The terms of acceptance specify that the work must be carried on for at least 50 years. That should provide time enough for even slow-breeding trees to show some good beginnings.

Science News Letter, July 24, 1937