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