motion of the system," said Dr. Miller, "are all in the same general direction and lie within a circle having a radius of 26 degrees. The assumed velocity of a hundred and thirty miles per second is about seven times the velocity of the earth in its orbit, and it is of a reasonable magnitude."

BLUE AND RED FLOWERS COLORED WITH SAME DYE

It makes no difference whether a flower is red or blue, its hue is due to the same fundamental substance. Its redness or blueness depends on the chemical nature of the plant sap. For example, deep red dahlias and blue cornflowers contain the same pigment but the sap of the dahlias is acid and that of the cornflowers is alkaline; and this makes all the difference. Intermediate shades depend on the degrees of acidity or alkalinity.

The name of this versatile plant pigment or dye is "anthocyanin", according to Prof. R. Robinson, well-known English physiological chemist, who told of investigations in this branch of plant physiology before the Royal Institution of Great Britain. This strange-looking word is made up of two simple Greek roots, which translate into "flower-blue", which is exactly descriptive of one of its phases.

There are really many distinct anthocyanins, Prof. Robinson explained, though chemically they are practically identical. By analysis they can all be shown to be derived from three fundamental substances, which are closely related to each other.

There appears also to be a fourth member of this group of basic flower dyestuffs, which has long been exploited by tropical Indian tribes as material for rouge, which, however, is used among them by gentlemen only.

"The Indians of South America in the vicinity of the Orinoco prepare a red plant pigment called 'carajura' or 'chica'," Prof. Robinson told his hearers. It is so valuable a commodity that it is said of a poorer native, 'he can only paint half of his face!' The chemical examination of carajura by Prof. A. G. Perkin, has resulted in the isolation of a red crystalline constituent called carajurin. The molecules of the salts of carajurin with acids have been proved to contain the characteristic nucleus of the anthocyanidins and apparently carajura proclaims a fourth anthocyanidin. It is unique both as a cosmetic and as an object of scientific research."

ANCIENT BEAR BONE FETISH GAVE MAN ARTISTIC URGE

By George Grant MacCurdy
Professor of Anthropology, Yale University

Discovery of a 100,000 year old lower jaw bone of a cave bear just made by Emil Baechler of St. Gallen throws new light on how man first came to be an artist.

This ancient relic unearthed by Dr. Baechler in the floor debris of a cavern at Wildenmannlisloch, a mile above sea level in the canton of St. Gallen, Switzer-

land, has a striking resemblance to a human head and body. The hollowness of the lower jaw bone's socket holding the canine tooth of this ancient bear must have suggested and formed to the eyes of the early dwellers of the cave the neck and chin of man.

This strange chance resemblance undoubtedly caused the bone to be prized or even worshipped; in fact, the piece bears evidence of a considerable amount of wear as if it had been carried as a fetish.

Fortuitous resemblances in nature such as this must have stimulated early man's nascent artistic bent and probably made him try his own hand at being an artist.

Flint nodules resembling some animal form have been found associated with artifacts of the Old Stone Age. They have also been found in deposits of the New Stone Age. Once detected, natural effigies would be gathered and treasured by the superstitious dwellers of that ancient age and means would eventually be found to supplement and improve on nature's haphazard creations.

The Paleolithic hunter who treasured the bear jaw bone could have inhabited Wildenmannlisloch only during an interglacial epoch - presumably the last one, known as the Riss-Wurm interglacial. The deposit can also be dated from the fact that it rests on a sterile glacial deposit, called Riss, and is covered by a sterile glacial deposit, called Wurm. The piece in question is probably 100,000 years old.

BARN SWALLOW AND BOBOEINK LONG DISTANCE FLIERS

When the barn swallow and the bobolink are numbered among the arrivals from winter quarters that are coming in almost daily now, they will have completed a journey of over 10,000 miles round trip, from northeastern United States to Argentina and back. A few individuals among the yellow-billed cuckoos, olive-backed thrushes, nighthawks and cliff swallows may have penetrated so far south but the barn swallows and bobolinks invade the region of pampas and the tango en masse.

Under the auspices of the United States Biological Survey, Dr. Alexander Wetmore of the Smithsonian Institution has been carrying on an investigation of the migratory habits of northern birds in their southernmost ranges. Most of the really long distance fliers are shore birds, he says, with notable exceptions mentioned above. The majority of the common birds with which most of us are familiar stop before they get very far south of the Equator, and sojourn in the north of South America.

The results of Dr. Wetmore's investigations in the southern part of South America are contained in a recently issued illustrated bulletin of the Smithsonian Institution. In it he claims that northern birds have three main routes of southward travel; They may go down the eastern coast of South America via the Brazilian coast, or along the Pacific taking in the mountain scenery of the Andes en route, or they may go straight south down through the central part of the continent.