began and continued about 4,000 years, closing with the introduction of bronze about 4,000 years ago.

This makes about 28,000 years since man first appeared on Swiss soil; but it must be borne in mind that he may have flourished in milder parts of the continent for indefinite ages before that. The vast Alpine glaciers rendered the climate of Switzerland uninviting long after the continental glacial period had ceased.

MOKI CEREMONIALS.

An instructive article for the student of primitive religions is that by Dr. J. Walter Fewkes on 'The Group of Tusayan Ceremonials called *Katcinas*.' (15th Rep. Bureau of Ethnology.) It is a faithful narration of the strange religious performances, amply illustrated, and the native terms preserved wherever possible.

The word *Katcina* is a vague term for spiritual beings of an inferior class to the highest deities of the tribe, but who are credited with much power over the welfare of the community. They may include the ancestral souls, but are not exclusively these. The ceremonies in their honor are frequent, and distributed throughout the year in a ritual calendar devised by the priestly class. Both men and women participate in them, and they have the character of a sacred drama, as have most primitive rituals. Masks, costumes and traditional songs and chants are prominent features.

Dr. Fewkes finds noticeable resemblances between these ceremonials and those of other Pueblos, but also marked differences. He is impressed with their analogies to those of the ancient Aztecs, and it is likely that throughout America numerous counterparts could be discovered.

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NOTES ON INORGANIC CHEMISTRY.

Léon Franck details in the Bulletin of the French Chemical Society some interesting experiments on the formation of metallic sulfids by mechanical action. When a mixture of fine aluminum powder and flowers of sulfur is rubbed between two sheets of paper, hydrogen sulfid is evolved, owing to the formation of aluminum sulfid and its subsequent decomposition. The same reaction takes place between magnesium powder and flowers of sulfur. If an aluminum plate be rubbed with flowers of sulfur, or even with vulcanized rubber, the odor of hydrogen sulfid is distinctly perceptible. With those metals whose sulfids are not decomposed in the air the reaction is different. When a plate of silver is rubbed with flowers of sulfur it gradually darkens, owing to the formation of silver sulfid, and if the action is continued, little prominences of silver sulfid are formed, which can be removed by a knife. Copper and lead give the same reaction as silver.

This reaction corresponds to the well known darkening of silver coins when carried in the pocket with sulfur matches. In the case of blackening of silver spoons by eggs the reaction is somewhat different, as the sulfur is in combination and in solution. The layer of sulfid must in this case be exceedingly thin, for silver spoons which have been used sometimes for more than a generation have been cleaned again and again, perhaps weekly, each time the layer of sulfid being rubbed off, and yet the spoons show apparently little diminution of weight.

In the *Comptes Rendus*, Léon Lémal describes the coloring of glass by the direct penetration of metals or metallic salts, analogous to the cementation process of steel making. If glass is covered with a silver salt, even in small quantity and heated to 500°–550°, on cooling it shows a

yellow to orange-red color, according to the length of time of heating. The depth of penetration of the color depends upon the duration of the reaction. Such glass is yellow by transmitted light, but by reflected light shows a yellowish-green to violet-blue fluorescence. By using a silver photographic plate on red glass colored with copper, it is possible to obtain a picture, visible by reflected light, but not by transmitted light, since the yellow of the picture is obscured by the red glass. Gold, copper and iron give results similar to silver; indeed, all metals experimented with, except manganese, were absorbed by the glass imparting to it color.

A CONTRIBUTION to the effect of light upon the union of hydrogen and chlorin is made by A. Gautier and H. Hélier in the *Comptes Rendus*. A mixture of carefully purified chlorin and hydrogen was kept in sealed tubes in absolute darkness for over fifteen months. No trace of hydrochloric acid was found, and the result was the same, whether the mixture was dry or moist. Similar experiments were tried, but the mixtures were exposed to the light of a candle, four meters away from the tube, and again one meter away. At the end of ten days it was found there had been no hydrochloric acid formed, showing that sunlight, or some source of light containing the more refrangible rays of the spectrum, is necessary for the union of hydrogen and chlorin at ordinary temperatures.

J. L. H.

SCIENTIFIC NOTES AND NEWS.

AN INTERNATIONAL ASSOCIATION.

THE meeting of the British Association in Canada in 1884 was thought a favorable opportunity for the proposal of an International Scientific Association, and the plan was editorially commended in this JOURNAL and supported by Professors Newcomb, Hunt, Minot and other American men of science. At that time Mrs. Elizabeth Thompson gave a fund to be administered by the Association when organized. The second meeting of the British Association in America and the plans for an exchange of courtesies between it and the American Association and between the British and French Associations in 1899, together with the development of international congresses for the separate sciences, seemed to make it desirable again to call attention to the importance of an international association for the advancement of science, and this was done in an article published in the issue of this JOURNAL for October 9, 1896.

The plan was approved in editorial articles in the *Scientific American* and *Appleton's Popular Science Monthly* and was quoted and discussed in foreign scientific journals. For reasons which we need not repeat, the advantages of an international conference seem to outweigh the difficulties, and we should like to see steps taken at the meetings of the American and British Associations for the organization of a congress to meet in 1900. Should it, however, be thought that the time has not yet come, then we should be glad to see the National Associations undertake in alternation to give their meetings an international character. This will to a certain extent be accomplished this year by the British Association. Arrangements should be made next week to secure the representation of foreign associations and societies by delegates at the next meeting of the American Association on the occasion of its fiftieth anniversary.

THE NEW TARIFF LAW.

THE tariff bill, now printed, fortunately contains none of the provisions inimical to science and education, against which we protested when the bill was first presented to the House of Representatives. The present bill does not materially alter the regulations in force during the last four years. The sections of the free list which concern apparatus, books, etc., read as follows:

Philosophical and scientific apparatus, utensils, instruments and preparations, including bottles and boxes containing the same, specially imported in good faith for the use or by the order of any society or institution, ncorporated or established solely for religious, philosophical, educational, scientific or lit-