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THE UNITED STATES will make a creditable display at the Paris Exhibition. And this is as it should be; for, although nominally a universal exposition, it will be practically a display of the products of republics. The monarchies of Europe will be represented only by private exhibits, while the republics of North and South America have rallied in force. The United States Department of Agriculture will make a splendid showing. Secretary Colman has placed the undertaking in the hands of Professor C. V. Riley, the famous entomologist, an energetic organizer as well as a careful and enterprising scientific observer; and Professor Riley has already sent forward three car-loads of products, which are on the way to France in charge of Mr. F. T. Bickford, an assistant. The bulk of shipments are nearly through with, and the perishable staples will follow during the next month. Congress appropriated $250,000 to aid exhibiters, and Secretary Colman's quota of this will insure the best illustration that the agricultura. resources of this country have ever had on the continent of Europe Various branches will be represented as follows: fruit, Professor VanDeman and Professor George Hussman; grain, George N. Hill, St. Paul, Minn.; cotton and fibres, Col. James A. Benford, Duck Hill, Miss., and Charles R. Dodge, Boston; tobacco and peanuts, Alexander McDonald, Va.; agricultural education and experimental stations, W. O. Atwater, Department of Agriculture; vegetables, including hops, M. G. Kern, St. Louis; entomology, including apiculture and silk-culture, C. V. Riley, N. W. McLean of Hinsdale, Ill., and Philip Walker, Department of Agriculture; sorghum and other sugar-plants, H. W. Wiley, Department of Agriculture; forestry, B. Fernow, Department of Agriculture, and M. G. Kern of St. Louis; grasses and forage-plants, George Vasey, Department of Agriculture; meat products, Dr. de Salmon, Department of Agriculture. All articles for exhibition will be forwarded free from New York, and no charge will be made for space in Paris. Professor Riley has put forth unusual exertions to get the exhibit on the road, and he looks forward with much enthusiasm to the result. He will not leave for Paris till the first week in April.

PHOTOGRAPHIC MAP OF THE NORMAL SOLAR SPECTRUM.

A NEW and greatly improved edition of this map, made by Professor H. A. Rowland, extending from the extreme ultra violet down to and including B to wave-length 6950, is now ready. The old map, published in 1886, was made by means of a grating ruled on the old dividing-engine, which was originally intended for only small gratings, and at a time when Professor Rowland's knowledge of photography was limited. Furthermore, it was not printed in a sufficiently careful manner; and the negatives, which were originally none too good, soon became broken or defaced, so that many of the prints, especially the later ones, were not satisfactory.

The whole work has now been gone over again. A new dividing-engine to rule large gratings has been constructed, and has proved to be superior in every way to the old one, although the old one is almost equal to it for small-size gratings. It has been placed in the vault of the new physical laboratory, where an almost constant temperature is maintained. Several concave gratings of 6 inches diameter and 21½ feet radius have been ruled with 10,000 or 20,000 lines to the inch, giving definition hitherto undreamed of. These have been mounted in the best possible manner. The laboratory contains rooms for developing, making emulsions and dry plates, complete enlarging apparatus, and, indeed, every facility for photographic work on the spectrum of the sun; and a large steam-engine, a variety of dynamos, continuous and alternating current, with Ruhmkorff coils of all kinds, one of which latter will melt down iron wire larger than one-sixteenth of an inch in diameter in the secondary circuit, give means of future investigation on the spectrum of the elements. Professor Rowland has devoted years to the making of dry plates, simple and orthochromatic, and is thus better prepared than before for the work of making the map. He has also revised his list of standard wave-lengths, and extended them into the ultra violet, and has placed the scale upon the photographs with greater care than before. The printing is carried on in Baltimore, where it is under the immediate supervision of Professor Rowland.

The negatives have been made on thick French plate glass, and the prints are much more artistic than the old ones. The definition is not only much finer throughout, but the prints are much more uniform, and have fewer spots.

The process of making this map is the same as that used for the old one, and is based on the property of the concave grating as discovered by Professor Rowland: this property is, that the spectrum, as photographed in any given order, is normal, and of the same scale throughout. The focus remains automatically adjusted, so that one has only to move the instrument to the part of the spectrum required, absorb the overlying spectra, and put in the photographic plate. The negatives enlarged have been selected from many hundreds taken from different gratings, though three gratings were finally selected for the work. The negatives from any given order of spectrum are measured from one standard line to another on a dividing-engine, so that the constant of the dividing-engine is known. The scale is then made by ruling on a piece of French plate glass having a coating of blackened collodio-chloride. The negatives are then clamped to the scale firmly, after being adjusted into position by the standards. They are then put in the enlarging apparatus, and the whole enlarged from two and a half to possibly