besides can be made out of the *physical* mixture of red and green and blue. That fact has been put beyond doubt, once for all, by the exceedingly exact measurements of Professor König, made by means of an instrument of very ingenious construction (and so expensive that it has been duplicated for hardly any other laboratories). There is not a psychologist who denies this physical fact, and for the physicist to constantly re-affirm it, and to say that it has received fresh proof (see the report of the last meeting of the scientific societies in New York) is much the same as if he should valiantly affirm that one side of a shield is of silver by way of opposition to those who say that the other side is of gold. What the psychologist denies is not that gray results when blue and yellow are mixed upon the color wheel—he has admitted that long ago, and it will be found as an elementary statement in every text-book of psychology. But he refuses to admit, nevertheless, that white is an even red-green-blue *sensation* in the same sense in which purple is an even red-blue sensation. It is here that the adherents of the Young–Helmholtz theory should attack him.

C. Ladd Franklin.

A LARGE CRYSTAL OF SPODUMENE.

To the Editor of Science: There has recently appeared in some scientific journals a notice of a crystal of spodumene stated to be about twenty-nine feet long, and to be the largest known. It may be of interest to your readers to learn that a much larger crystal has been observed. In the year 1885 while studying the tin ore or cassiterite localities of the Black Hills of Dakota I saw and measured, in the Etta tin mine near Harney's Peak, a spodumene crystal thirty-eight feet and six inches in length and thirty-two inches in thickness. This thirty-eight and a half foot crystal was almost perfect, and was situated within a few yards of the surface. Owing to its size and the difficulties of transportation at that time, the railway being one hundred and thirty miles distant, I made no attempt to have the crystal removed. I, however, collected other crystals of spodumene in the vicinity, and some of these measured from two to six feet in length. Subsequently, in a public lecture upon the Black Hills, given in the University of North Dakota in February, 1886, I announced the discovery of the aforesaid gigantic crystal; but, because of the pressure of teaching and other numerous duties, that discovery has not been reported in the regular scientific journals.

For the benefit of some readers it may perhaps be well to state that spodumene is a grayish-white or pink mineral of considerable hardness, being nearly as hard as quartz, and that it consists of silica, alumina and lithium.

Henry Montgomery.

Trinity University, Toronto,
July 17, 1900.

---

*UNITS AT THE INTERNATIONAL ELECTRICAL CONGRESS.**

At the suggestion of Professor Hospitalier, Section I. of the Congress agreed that the following should be the members of the Commission on Units: Messrs. Ayrton (Great Britain), De Chatelain (Russia), Dorn (Germany), De Fodor (Hungary), Eric Gérard (Belgium), Hospitalier (France), Lombardi (Italy), Kennelly (United States); and at the first meeting of the Commission, on August 21st, which was attended also by Professor F. Kohlrausch and Sir W. Preece—whose names had been added to the list of the government delegates for Germany and England—a report presented to the Congress by the American Institute of Electrical Engineers was taken into consideration. This report had been drawn up for that Institute by a committee appointed for this purpose, and it contained the following resolutions:

(1) We consider that it is necessary to give names to the absolute units in the electromagnetic and electrostatic systems, as well as convenient prefixes to designate the decimal multiples and submultiples of these units in addition to those already in use.

(2) The International Congress of Electricians, which will take place this year in Paris, should be invited to choose the names and the prefixes.

(3) A great advantage would be gained by a rationalization of the electric and magnetic

*From *Nature*.

units, and the Congress should be invited to find ways and means to obtain such a rationalization.

The proposition to rationalize the units—that is, to change them so that the coefficient 4π should not appear—was withdrawn by Dr. Kennelly on behalf of the United States; as well as the suggestion regarding the employment of prefixes, and it was resolved that:

The Commission will only deal with propositions that will introduce no change in the decisions arrived at at previous congresses.

A long discussion then took place as to whether it was really necessary to give names to the C. G. S. units either in the electrostatic or the electromagnetic systems, and finally it was agreed to withdraw the proposition so far as it dealt with the electrostatic system.

The desirability of giving a name to the unit of magnetic field and to the unit magnetic flux was strongly urged, and as the names of *Gauss* and *Weber* had been employed for some years in America for these units respectively, the advantage of adopting these names for the C. G. S. units of field and flux was advocated. On the other hand, the resolution arrived at by the Electrical Standards Committee of the British Association in 1895 to employ those names respectively for other units was pointed out. Finally, the Commission, at the end of their second sitting, on August 22d, recommended the following:—

"The Commission is not of opinion that it is necessary to give names to all the electromagnetic units.

"However, in view of the use already of practical instruments which give the strength of a magnetic field directly to C. G. S. units, the Commission recommends that the name of *Gauss* be assigned to this unit in the C. G. S. system.

"The Commission proposes to assign to the unit of magnetic flux, of which the magnitude will be subsequently defined, the name of *Maxwell.*"

These resolutions were brought before Section I. of the Congress on August 24th, and led to a long discussion. M. Mascart opposed the giving a name to the C. G. S. unit of magnetic field. The employment of practical instruments for the direct measurement of the strength of magnetic fields in C. G. S. units was not, in his opinion, a sufficient reason for assigning a name to that unit. Besides, this decision of the Commission appeared to be contrary to the spirit of the Congresses of 1881 and 1889, which did not give the names of men to the C. G. S. units. He admitted that the name of a man might be given to the practical unit. In any case the name of 'Gauss' seemed to him liable to give rise to confusion, for Gauss was the originator of the first absolute system employed, viz, that of the 'millimetre-milligramme-second' system, and that system, as distinguished from the 'centimetre-gramme-second' system, was still in actual use in certain cases—for the measurement of the earth's field, for example.

Professor Kohlrausch said that the 'absolute units' were enough for the physicists, but that, if the engineers felt the need of practical units, Dr. Dorn and he did not see that any inconvenience would arise from names being given to them, such as those of Gauss and of Maxwell, for example. The German delegates could not, however, commit their Government in the matter, and they considered that the Congress should limit its recommendations to the use of these new names without seeking that legal sanction should be given to them.

Professor Ayrton agreed with M. Mascart, and mentioned that during the past five years many 'Ayrton-Mather Field Testers' had been constructed to read off the strength of a magnetic field directly in C. G. S. units, but that no need for any special name for that unit had been felt in connection therewith. He added, however, that, while holding the opinion expressed by M. Mascart that it was not desirable to give the names of persons to the C. G. S. units, the units of field and flux had this peculiarity, that without any multipliers they were the practical units adopted.

To this M. Mascart replied that the word 'practical' in this connection was ambiguous, since, although it was true that the C. G. S. units of magnetic field and flux were employed in practice, they did not belong to the so-called 'practical system.'

M. Hospitalier appealed to the Section to give names to the unit of field and the unit of flux. He did not ask for any legal decision in

the matter, for the names were put forward as a simple recommendation to the Section.

After a discussion in which Messrs. Ayrton, Carpentier, Dorn, Hospitalier, Kohlrausch, Mailloux, Mascart, A. Siemens, Silvanus, Thompson and others took part, Professor Eric Gérard stated that in his opinion it was desirable to come first to a decision that names should be given to the C. G. S. units of magnetic field and to flux of magnetic induction.

M. Mascart, expressing his approbation of this idea, the president of the Section, M. Violle, put the following proposition formally to the meeting:

"The Section recommends the adoption of specific names for the C. G. S. units of magnetic field and of magnetic flux." This proposition being adopted, with only two dissentients, the meeting was adjourned for a short time to enable the members to exchange their views regarding the exact names that should be employed. On the meeting reassembling, the president put the two following propositions successively:

(1) *The Section recommends the adoption of the name of* GAUSS *for the C. G. S. unit of magnetic field.*

(2) *The Section recommends the adoption of the name of* MAXWELL *for the C. G. S. unit of magnetic flux,*

both of which were adopted with only two dissentients.

On the same afternoon these resolutions of Section I. were submitted to the Chamber of Government Delegates to the Congress and adopted, and finally, at the closing meeting of the Congress on Saturday, August 25th, the action which had been taken in the matter was formally reported by M. Paul Janet, one of the two secretaries of the Congress.

THE PROPOSED NATIONAL STANDARDS BUREAU.

THE American Philosophical Society has adopted the following resolution in regard to the proposed National Standards Bureau:

Whereas, In the conduct of accurate scientific investigations, the use of apparatus of guaranteed accuracy is a need recognized by all scientists; and

Whereas, In foreign countries, notably in Germany, in France, and in England, such guarantee is furnished by standardizing bureaux under the control of the respective governments; and

Whereas, At present the United States Office of Standard Weights and Measures does not possess appliances necessary for this verification of as wide a range of apparatus as seems essential, nor the working force required to comply with legitimate demands for the verification and stamping of the various scientific apparatus designed for measurements of precision, thus compelling the importation of foreign-made articles when such official certification is desired; and

Whereas, This state of affairs is not only unsatisfactory to all investigators in both pure and applied science, but also works injustice to our manufacturers of nearly all physical and chemical apparatus designed for accurate measurement, who cannot supply the proper certification with such instruments: therefore be it

Resolved, That the Congress of the United States be urged to establish a National Standards Bureau, in connection with the U. S. Office of Standard Weights and Measures, which shall provide adequate facilities for making such verification of scientific measuring apparatus and stamping the same as are provided by foreign governments for similar work.

Resolved, further, that a copy of the foregoing be forwarded to the Secretary of the Treasury, under whose control the present office of Standard Weights and Measures comes; to the Superintendent of the U. S. Coast and Geodetic Survey; to the President of the U. S. Senate; to the Speaker of the United States House of Representatives; to the Chairman and members of the Committee on Coinage, Weights and Measures, and to any other officials or individuals likely to be interested or influential, with a request for their co-operation in our efforts to secure for the U. S. Office of Standard Weights and Measures ample facilities, in point of apparatus and working force, to enable that office to comply with the requests for the verification of measuring instruments that may be made by American scientific workers.