the theory of the general circulation of the atmosphere as put forward by Ferrel and Thomson, and as adopted in all the newer text-books, that it seems well to give here a translation of Dr. Hildebrandsson's summary (pp. 47–48 of the report):

"By means of direct observations the following results have been obtained: (1) Above the heat equator and the equatorial calms there is, throughout the year, a current from the east which seems to have very high velocities at great altitudes. (2) Above the trades there is an anti-trade from S. W. in the northern, and from N. W. in the southern hemisphere. (3) This anti-trade does not extend beyond the polar limit of the trade; it is deflected more and more to the right in the northern, and more and more to the left in the southern hemisphere, and finally becomes a current from the west above the crest of the tropical high pressure belts, where it descends to supply the trades. (4) The districts at the equatorial margin of the trades are partly in the trades and partly in the equatorial calms, according to the season. Above them there is, therefore, an upper monsoon: the anti-trade in winter, and the equatorial current from the east in summer. (5) From the tropical high pressure belts the air pressure on the whole decreases continuously towards the poles, at least to beyond the polar circles. Further, the air of the temperate zone is drawn into a vast 'polar whirl' turning from west to east. This whirling movement seems to be of the same nature as that in an ordinary cyclone: the air of the lower strata approaches the center, while that of the higher strata tends out from the center, and this outward tendency increases with the altitude above sea level as far up as the greatest altitudes from which we have observations. (6) The upper currents of the atmosphere in the temperate zones extend over the tropical high pressure belts, and descend there. (7) The irregularities which are noted at the earth's surface, especially in the regions of the Asian monsoons, as a whole disappear at the lower or intermediate cloud levels. (8) We must entirely abandon the notion of a vertical circulation between tropics and poles which has up to this time been accepted in accordance with the theories of Ferrel and Thomson."

This 'vertical circulation,' to which allusion is made, refers to the view that the air, ascending near the equator, flows as an upper current across the tropical high pressure belts to the circumpolar regions, and thence returns as an intermediate current from the poles towards the equator. It is in regard to this point that the conclusions of Dr. Hildebrandsson are most interesting. Dr. Hildebrandsson expressly states that he simply presents facts, and does not discuss theories. But he does say most emphatically (p. 44): "*Il faut donc abandonner une fois pour toutes cette idée d'une circulation verticale entre les tropiques et les poles,*—circulation qui semble du reste impossible pratiquement dans une couche dont l'épaisseur est très petite en comparison avec les distances horizontales. Espérons que dès à présent ces 'courants polaires' et 'équatoriaux,' qui ont fait tant de confusion dans la météorologie dynamique, disparaîtront enfin complètement de la science météorologique, au moins dans le sens dans lequel on les a adoptés jusqu'ici." R. DEC. WARD.

THE LIGHT OF NOVA GEMMORUM.

THE light of Nova Gemmorum appears to be fluctuating like that of Nova Persei No. 2. On the evening of May 1 it appeared that its light had increased about half a magnitude during the preceding twenty-four hours. Since the measures described in the *Astronomical Bulletin* of April 22, similar measures were obtained on April 24, 25, 27, 28, 29, 30 and May 1, and gave the magnitudes 9.37, 9.67, 9.71, 9.81, 9.61, 9.76 and 9.26 respectively.

EDWARD C. PICKERING.

BRAIN-WEIGHT, CRANIAL CAPACITY AND THE FORM OF THE HEAD, AND THEIR RELATIONS TO THE MENTAL POWERS OF MAN.

DR. H. MATIEGKA, in Part I. of his extensive studies on this subject,* has published some

* 'Ueber das Hirngewicht, die Schädelkapacität und die Kopfform, sowie deren Beziehungen zur psychischen Thätigkeit des Menschen,' *Sitzb. d. kön böhm. Ges. d. Wiss.*, II. Classe, Article XX., 1902.

new and interesting facts concerning the weight of the human brain. His material and data were gathered in the Bohemian Institute of Pathological Anatomy and in the Institute of Forensic Medicine, and were subjected to a careful analysis with reference to age, sex, stature, race, muscular and skeletal development, state of nutrition, mental state, occupation, cranial capacity and form, and the mode of death. The work is exhaustive, and hardly permits of suitable abstraction in a limited space. Only a few of the most interesting results may be quoted here.

The heaviest male brain (1,820 gms.) was that of a young man, age 22, of large stature (180 cm.) and powerful build, well-nourished; suicide by drowning. The heaviest female brains, three in number, weighed 1,500 gms. The lightest female brain, from an individual of middle age (25 years), weighed 1,020 gms., with a stature of 150 cm.; cause of death, hemorrhage from a stab-wound of the lung. The brain of a senile female (age, 89) weighed 1,000 gms. The average weight (or as Matiegka specifies, '*der Kulminationspunkt*') of males aged 20 to 59 is 1,400 gms.; of females, 1,200 gms.

Among recent brain-weights of notable persons, Matiegka mentions that of Konstantinoff, a Bulgarian novelist, 1,595 gms.; F. Smetana, the insane composer, 1,250 gms. (atrophy of paralytic dementia); J. G. Kolár, a Bohemian dramatic writer, 1,300 gms. (age, 84 years; senile atrophy), and Marie Bittner, a talented actress, age 44, 1,250 gms. (about 45 gms. above the average). The skull of P. J. Šavařík, the noted Slavist, had a capacity of 1,738 c.c., which, with Manouvrier's coefficient 0.87, gives an estimated brain-weight of 1,512 gms.

One of the most interesting chapters in Matiegka's monograph concerns the relations of brain-weight and occupation. For this analysis he had 235 brain-weights at his disposal, which he arranged in six groups, ascending from the ordinary day-laborers, who never could learn a trade or remain steadily employed, to those of considerable mental ability. The table is here reproduced in condensed form:

		No. of Cases.	Average Brain-weight.
Group	I. Day-laborers	14	1,410.0
"	II. Laborers	34	1,433.5
"	III. Porters, watchmen, etc.	14	1,435.7
"	IV. Mechanics, trades-workers, etc.	123	1,449.6
"	V. Business-men, teachers, clerks, professional musicians, photographers, etc..	28	1,468.5
"	VI. Men of higher mental abilities, presupposing a collegiate education, such as scholars, physicians, etc.	22	1,500.0

Persons employed in clothing industries, who are apt to be poorly nourished and not very muscular, show a lower brain-weight, 1,433.6 gms. Carpenters (11 cases) have 1,441.8 gms.; coachmen and truck-drivers (14 cases), 1,445.7 gms. Blacksmiths, locksmiths and metal-workers in general, who are as a rule muscular and well-nourished, have a higher brain-weight (21 cases) 1,476.7 gms. Persons occupied in the manufacture and sale of alcoholic beverages (brewers, tavern-keepers, waiters, etc.) have a low brain-weight (16 cases), 1,416.9 gms., doubtlessly due to the large proportion of drinkers among them.

These results are indeed striking and significant, and while they may be challenged as being based upon an insufficient number of cases, the method of the analysis employed by Matiegka is worthy of wide-spread adoption in anatomical institutes everywhere.

E. A. SPITZKA.

THE ST. LOUIS CONGRESS OF ARTS AND SCIENCES.

WE begin on Monday, the 19th of September, 1904, late enough to avoid the tropical summer heat of St. Louis, and early enough still to make use of the university vacations. On Monday morning the subject for the whole congress is knowledge as a whole, and its marking off into theoretical and practical knowledge. Monday afternoon the seven divisions meet in seven different halls; Tuesday the seven divisional groups divide them-