was first covered by this incrustation of limestone, but in the course of time was completely buried in the thin, ribbon-like layers of this stalagmite. Then the floor of the cave was broken up, and the detached piece containing this specimen was carried here by water, or ice, or both, and here it has remained imbedded in this blue clay till all of the alluvium has been deposited. Several arrow-points have been found buried seven or eight feet below the surface of the earth. I have carefully examined two of these finds. They were buried in a tough, compact clay. They were found by workmen while cutting into the hillside and grading the public roads. A small arrow point was found by a friend of mine while digging a well. It was twenty-four feet below the surface of the earth. It is a well-made and beautiful arrow-point, and my friend will not part with his valuable specimen.

FRENCH ACADEMY OF SCIENCES.

August 8, 1881.

MINERALOGY.—M. Klein presents a communication on different solutions of very great density, which can be advantageously utilized in laboratories to separate pulverulent mineral particles from foreign bodies. The salts employed by M. Klein are the tungstoborates of cadmium, nickel and cobalt. The density of the solutions of the last two salts is 3. 4; yet M. Klein prefers to them the solution of tungstoborate of cadmium, whose density is only 3. 2, but which is quite transparent, while the others are very colored. The tungstoborate of cadmium can, besides, be obtained in crystals; it melts at a temperature of 75°, and becomes a transparent liquid, whose density is 3. 6.

PHYSICS.—M. Ancelin described a method of heating intended to replace foot-warmers of water. His system is based on the fact that every body which passes from a liquid to a solid state gives off its latent heat of fusion.

M. Ancelin encloses some acetate of soda in a metallic vase, which is then heated to a temperature of about 80°. Then left to itself, the apparatus cools little by little to about 59°; the acetate of soda then commences to solidify, and gives off its latent heat. While the solidification continues, the vase remains at the same temperature. Boilers heated in this way will remain hot four times as long as by the use of water, about twenty to twenty-two hours.

EXTRACTION OF SULPHUR.—M. Dubreuil, who has devised a new method for extracting the sulphur of Sicily, announces that he has found in the mother waters of the salt marshes of Palermo, charged with chloride of magnesium and boiling at 120°, a suitable substance to separate from the sulphur the earthy bodies which accompany it.

FOR the unities of electric measures there are adopted the fundamental unities—centimetre, gramme, second, and this system is briefly designated by the letters C. G. S. The practical units, the *ohm* and the *volt*, will retain their present definitions; the ohm is a resistance equal to 10^8 absolute unities (C. G. S.), and the volt is an electromotive force equal to 10^9 absolute unities (C. G. S.). The practical unit of resistance (ohm) will be represented by a column of mercury of 1 square mm. in section at the temperature of 0° C. An international commission will be charged with ascertaining for practice, by means of new experiments, the height of this column of mercury representing the ohm. The name *ampère* will be given to the current produced by the electromotor force of 1 volt in a circuit whose resistanse is 1 ohm. *Coulomb* is the quantity of electricity defined by the condition that in the current of an ampère the section of the conductor is traversed by a coulomb per second. *Farad* is the capacity defined by the condition that a coulomb in a condenser, whose capacity is a farad, establishes a difference of potential of a volt between the armatures.

COMET (*g*) 1881, SWIFT.

At eleven o'clock last evening, Director Lewis Swift, of Warner Observatory, discovered the seventh comet of the year in the Constellation of Cassiopeia in a line between Polaris and the great cluster in Perseus, a trifle nearer Polaris. It is nearly round, faint, has a slight central condensation, but no tail is yet visible. Its right ascension is one hour and fifty minutes, (1 h. 50 m). Declination north seventy-one (71) degrees, and its motion slow westward. Estimated diameter, about four minutes. As the comet of 1812 is anticipated from this quarter, it may be the great Pons Comet. This makes the sixth comet discovered in this country since May 1st, Swift getting the two hundred dollar Warner prize twice. The fifteen hundred dollars given in comet prizes during the past twelve months by Mr. Warner has evidently given an extraordinary impetus to astronomical study in this country. Director Swift, of the Warner Observatory, will visit Egypt, by the generosity of the founder of the Observatory, in December, 1882, to observe the total eclipse of the sun and verify his celebrated discovery of an intra-mercurial planet in 1878, which has been so much disputed by astronomers.

C. S. WHITTLERE,
Sec'y. Roch. Astro. Society.

WARNER OBSERVATORY, ROCHESTER,
N. Y., *November* 17, 1881.

COPYING INK FOR READILY TRANSCRIBING LETTERS WITHOUT A PRESS.

A paper on this subject by Professor Attfield, F.R.S., &c., was read at the last annual Pharmaceutical Conference at York, England. The author stated that for the past thirteen years all letters, reports, &c., that he had written had been transcribed into an ordinary thin-paper copying-book with no more effort than was employed in using apiece of blotting-paper. It had only been necessary to place the page of writing, note size, letter size, or even foolscap, in the letter-book, and use a leaf of the letter-book just as one would use a leaf of blotting-paper. The superfluous ink that would go into blotting-paper went on to the leaf of the letter-book, and, showing through the thin paper as usual, gave, on the other side of the leaf, a perfect transcript of the letter. Any excess of ink on the page, either of the letter or of the copying paper, was removed by placing a sheet of blotting-paper between them and running one's hand firmly over the whole in the ordinary manner.

This ready transcription was accomplished, as would be anticipated, by using ink which dried slowly. Indeed, obviously, the ink must dry sufficiently slowly for the characters at the top of a page of writing to remain wet when the last line was written, while it must dry sufficiently fast to preclude any chance of the copied page being smeared while subsequent pages were being covered. The drying must also be sufficiently rapid to prevent the characters "setting off," as printers term it, from one page on to another after folding.

The author then alluded to some difficulties attending the employment of the ink which had prevented its becoming an article of wholesale trade, but, he said, any chemist and druggist could make it and sell it, giving directions for use to customers. He himself had used it from year's end to year's end without any trouble whatever. It would be particularly useful to professional men and private persons.

The principle of the method of preparation consisted in dissolving a moderately powerful hygroscopic substance in any ordinary ink. After experimenting on all such substances known to him, he gave the preference to glycerin. Reduce, by evaporation, ten volumes of ink to six; then add four volumes of glycerin. Or manufacture some ink of nearly double strength and add to any quantity of it nearly an equal volume of glycerin.

SECONDARY BATTERIES.—J. Rousse.—In order to accumulate electricity for the production of light or motive power, the author has arranged secondary batteries, which differ from those of M. G. Plant. At the negative pole he uses a sheet of palladium, which, during the electrolysis, absorbs more than 900 times its volume of hydrogen. At the positive pole he uses a sheet of lead. The electrolysed liquid is sulphuric acid at 1-10th. This element is very powerful, even when of small dimensions. Another secondary element which has also given good results, is formed at the negative pole of a slender plate of sheet-iron. This plate absorbs more than 200 times its volume of hydrogen when electrolysed in a solution of ammonium sulphate. The positive pole is formed of a plate of lead, pure or covered with a stuatum of litharge, or pure oixide, or all these substances mixed. These metallic plates are immersed in a solution containing 50 per cent of ammonium sulphate. Another arrangement is at the negative pole, sheet-iron; at the positive pole a cylinder of ferro-manganese. The electrolysed liquid contains 40 per cent ammonium sulphate.

CONSTITUTION OF THE MILKY WAY.—When the milky way is regarded with an indifferent eye, it seems that its brightness is the same in all parts. But it is quite otherwise when the relative luminous intensity of its different portions is measured. It is then found that the milky way is composed of a series of luminous plates separated from each other by darker portions. Thirty-three of these nodules have been counted, the centre of which is more brilliant than the borders, and it is stated that they are arranged nearly mathematically along a great circle of the celestial sphere.

AN EXPLANATION.

To the Editor of "SCIENCE."

DEAR SIR,—In giving the specific rotatory power in my article "Amylose" in SCIENCE of Oct. 1st this year, I used the expression (a) to designate the specified rotatory power for the *teinte de passage* since that is the usual ray employed. On the other hand I used (a)j to designate the same property for the yellow ray, meaning by the yellow ray the monochromatic sodium flame.

Since, however, it is the usual custom to designate the "rose-purple" transition tint by (a)j as if it were a yellow ray and the sodium ray by (a) D, I desire to make this explanation of the symbols used.

Respectfully,

H. W. WILEY.

LAFAYETTE, IND., *Nov.* 5, 1881.

OBSERVATIONS AND RESEARCHES ON BLOOD-STAINS.—D. Vitaci—Attention has been recently called to a reaction discovered by Schœbein—the blue coloration produced by a mixture of oil of turpentine and alcoholic tincture of the resin of guiacum, on the additionof a little blood or a very dilute solution of hæmoglobin. It is said that this reaction is preferable to any other, not excepting that founded on the formation of crystals of hæmine and on spectroscopic observation, and that none of the substances capable of simulating blood-spots give the same opaque blue color. The author, however, shows that all substances capable of acting as direct or indirect oxidising agents are capable of producing the same reaction.

METEOROLOGICAL REPORT FOR NEW YORK CITY FOR THE WEEK ENDING NOV. 12, 1881.

Latitude 40° 45′ 58″ N.; Longitude 73° 57′ 58″ W.; height of instruments above the ground, 53 feet; above the sea, 97 feet; by self-recording instruments.

NOVEMBER.	BAROMETER. MEAN FOR THE DAY. Reduced to Freezing.	BAROMETER. MAXIMUM. Reduced to Freezing.	BAROMETER. MAXIMUM. Time.	BAROMETER. MINIMUM. Reduced to Freezing.	BAROMETER. MINIMUM. Time.	THERMOMETERS. MEAN. Dry Bulb.	THERMOMETERS. MEAN. Wet Bulb.	THERMOMETERS. MAXIMUM. Dry Bulb.	THERMOMETERS. MAXIMUM. Time.	THERMOMETERS. MAXIMUM. Wet Bulb.	THERMOMETERS. MAXIMUM. Time.	THERMOMETERS. MINIMUM. Dry Bulb.	THERMOMETERS. MINIMUM. Time.	THERMOMETERS. MINIMUM. Wet Bulb.	THERMOMETERS. MINIMUM. Time.	MAXI'M In Sun.
Sunday, 6	30.151	30.302	12 p. m.	29.988	0 a. m.	52.3	48.3	60	3 p. m.	52	3 p. m.	46	12 p. m.	43	12 p. m.	112.
Monday, 7	30.315	30.400	9 a. m.	30.252	12 p. m.	47.6	46.0	51	5 p. m.	50	12 p. m.	42	7 a. m.	42	7 a. m.	56.
Tuesday, 8	30.145	30.252	0 a. m.	30.100	12 p. m.	58.0	57.6	62	4 p. m.	61	4 p. m.	50	0 a. m.	49	0 a. m.	68.
Wednesday, 9	30.008	30.112	12 p. m.	29.910	4 p. m.	62.3	60.0	68	3 p. m.	65	3 p. m.	54	12 p. m.	49	12 p. m.	80.
Thursday, 10	30.245	30.296	12 p. m.	30.112	0 a. m.	46.7	43.3	51	2 p. m.	45	2 p. m.	43	12 p. m.	40	12 p. m.	110.
Friday, 11	30.319	30.394	9 a. m.	30.222	12 p. m.	42.3	39.0	46	3 p. m.	41	3 p. m.	39	8 a. m.	37	10 a. m.	111.
Saturday, 12	29.801	30.222	0 a. m.	29.548	12 p. m.	51.3	50.0	60	8 p. m.	59	8 p. m.	42	2 a. m.	38	2 a. m.	62.

		Dry.	Wet.
Mean for the week	30.140 inches.	51.5 degrees	49.1 degrees
Maximum for the week	30.400 " at 9 a. m., Nov. 7th	68. " at 3 pm 9th	65. "
Minimum "	29.548 " at 12 p. m., Nov. 12th	39. " at 8 am. 11th	at 10 am 11th, 37. "
Range	.852 "	29. "	28. "

NOVEMBER.	WIND. DIRECTION. 7 a. m.	2 p. m.	9 p. m.	VELOCITY IN MILES. Distance for the Day.	FORCE IN LBS. PER SQR. FEET. Max.	Time.	HYGROMETER. FORCE OF VAPOR. 7 a. m.	2 p. m.	9 p. m.	RELATIVE HUMIDITY. 7 a. m.	2 p. m.	9 p. m.	CLOUDS. CLEAR, 0 OVERCAST. 10 7 a. m.	2 p. m.	9 p. m.	RAIN AND SNOW. DEPTH OF RAIN AND SNOW IN INCHES. Time of Beginning.	Time of Ending.	Duration. h. m.	Amount of water	OZONE. 0 10
Sunday, 6	w.	n. w.	n. e.	188	5	1.00 am	.310	.269	.283	92	54	78	0	0	0	-----	----	-----	--	3
Monday, 7	n. e.	e. n. e.	e.	155	2½	5.00 pm	.267	.283	.321	100	78	86	8 cu.	9 cu.	10	7 pm	12 pm	5.00	.04	0
Tuesday, 8	n. e.	s. e.	s. s. e.	107	1½	0.15 am	.418	.505	.487	100	94	94	10	10	10	4 am	8 am	4.00	.10	
																3 pm	5 pm	2.00	.10	10
Wednesday, 9	s. s. e.	w. s. w.	n. w.	154	4⅜	10.00 pm	.487	.577	.409	94	84	82	10	9 cu.	8 cu.	4 am	11 am	7.00	.13	
																4 pm	6 pm	2.00	.02	6
Thursday, 10	w. n. w.	n. w.	n. w.	273	7⅝	1.30 am	.275	.220	.218	92	59	75	1 cir.	7 cir. cu.	4 cir. cu.	-----	-----	-----	--	0
Friday, 11	n. n. w.	n. w.	e.	177	3¼	0.00 am	.216	.173	.195	90	60	68	3 cir. cu.	1 cir. s.	5 cu.	-----	-----	-----	--	2
Saturday, 12	e. s. e.	s. e.	w. s. w.	134	6¾	6.00 pm	.231	.348	.487	83	93	94	10	10	10	10¼ am	11 pm	12.30	.65	1

Distance traveled during the week	1,188 miles.	Total amount of water for the week	1.04 inch.
Maximum force	7¾ lbs.	Duration of rain	1 day, 8 hours, 30 minutes.

DANIEL DRAPER, Ph. D.

Director Meteorologica Observatory of the Department of Public Parks, New York.