

their Treatment," by Bernal, and "Notes Introductory to the Study of the Animal Alkaloids for Students," by Dr. A. M. Brown. Messrs. Sampson Low and Co., Ltd., promise:—"The Wild Flower Journal," by Mrs. Arthur Bell; "The Manufacture of Leather," by Charles T. Davis, new and revised edition, illustrated; "How to treat Accidents and Illnesses," by H. Morten, new edition, illustrated; "A Treatise on Paper-Making," by Carl Hofmann, new edition in parts, illustrated. Among Mr. Murray's announcements we notice:—"A Flower Hunter in Queensland," by Mrs. Rowan, illustrated. In Messrs. Nelson and Sons' list we find:—"Rambles among the Wild Flowers," by Dr. M. C. Cooke, illustrated. Mr. J. C. Nimmo announces:—"British Game Birds and Wild Fowl," by Dr. B. R. Morris, revised and brought up to date by W. B. Tegetmeier, 2 vols., illustrated. Messrs. George Philip and Son's announcements include:—"Life Size Anatomical Model of the Human Body, for Class Use"; "Model of a Locomotive Steam Engine, with an historical sketch and brief description of the working parts for the use of general readers and elementary students," by H. H. P. Powles; "Indian Frontier, a map of the North Western Frontier of India, with insets (1) showing the overland route to India, (2) a military map of the Indian Empire" (scale: 55 miles to 1 inch; size: 22 x 30 inches); "Klondike Gold Fields, a map of British Columbia showing the Klondike, Cariboo, Kootenay and other Gold Fields, with inset map of West Canada showing the route to the new Gold Fields" (scale: 47 miles to 1 inch; size: 22 x 30 inches); "Philips' Revolving Planisphere and Perpetual Calendar" (special edition for desk use); Messrs. G. P. Putnam's Sons give notice of:—"Religions of Primitive Peoples," by Dr. D. G. Brinton, and "The Liver of Dyspeptics," by Dr. Émile Boix. Messrs. Rivington and Co. promise:—"Handbooks of Practical Science, in three books, to be published separately: No. 1, "Physical Measurements"; No. 2, "Chemical Experiments"; No. 3, "Experimental Mechanics," by G. H. Wyatt; and a New Edition of "Elementary Non-Metallic Chemistry," by S. R. Trotman. Messrs. Smith, Elder, and Co.'s list contains:—"Reference Book of Practical Therapeutics," by various authors, edited by Dr. F. P. Foster, 2 vols; "A Practical Treatise on Traumatic Separation of the Epiphyses, including the Anatomy of the Epiphyses, the Pathological Anatomy, Symptoms, Treatment, and Results of Traumatic Separations"; "Spinal Caries," by Noble Smith, new edition, illustrated. The list of the University Correspondence College Press includes:—"A Manual of Psychology," by G. F. Stout; "The Tutorial Algebra," by W. Briggs, and Prof. G. H. Bryan, F.R.S.; Part i. Elementary Course; Part ii. Advanced Course; "Advanced Mechanics," by W. Briggs, and Prof. G. H. Bryan, F.R.S.; Part i. Dynamics, Science and Art; "Elementary Text-book of Mechanics," second edition, by W. Briggs, and Prof. G. H. Bryan, F.R.S.; "Properties of Matter," by E. Catchpool; "First Stage Magnetism and Electricity," by Dr. R. H. Jude; "An Elementary Text-book of Sound," by John Don; "The Tutorial Chemistry," by Dr. G. H. Bailey, Part ii. Metals.

THE additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus*) from India, a Toque Monkey (*Macacus pileatus*) from Ceylon, a Sooty Mangabey (*Cercocebus fuliginosus*), a White-crowned Mangabey (*Cercocebus athiops*) from West Africa, presented by Mr. W. S. Gilbert; a White-fronted Lemur (*Lemur albifrons*) from Madagascar, presented by Mr. George F. Gardner; a Rufous Rat Kangaroo (*Epyprymnus rufescens*) from New South Wales, presented by Dr. J. S. Williams; a Greater Black-backed Gull (*Larus marinus*), four Lesser Black-backed Gulls (*Larus fuscus*), British, presented by Mr. W. J. Simpson

Ladell; four Rollers (*Coracias garrulus*), twenty Marbled Ducks (*Marmaronetta angustirostris*), two Pochards (*Fuligula ferina*), six Black-bellied Sand Grouse (*Pterocles arenarius*), two Pintail Sand Grouse (*Pterocles alchata*), three Stone Curlews (*Ædicnemus scolopax*), twelve Pratincoles (*Gareola pratincola*), nine Great Bustards (*Otis tarda*), four Little Bustards (*Otis tetrax*), two Slender Gulls (*Larus gelastes*) from Spain, two Serrated Terrapins (*Chrysemys scripta*) from North America, four Reeve's Terrapins (*Damonia reevesi*) from China, an Amboina Box Terrapin (*Cyclemmys amboinensis*) from the East Indies, a Bell's Cinixys (*Cinixys belliana*), two — Sternotheres (*Sternotherus adansonii*) from West Africa, a Lesueur's Gecko (*Edura lesueurii*), a White's Skink (*Egernia whitii*), two Cunningham's Skinks (*Egernia cunninghami*), two Lesueur's Skinks (*Lygosoma lesueurii*), a — Skink (*Lygosoma mustelinum*), thirty-one — Skinks (*Lygosoma decresiensis*) from Australia, deposited.

#### OUR ASTRONOMICAL COLUMN.

NEW DIVISIONS IN THE RINGS OF SATURN.—Prof. J. M. Schaeberle announces (*Astronomical Journal*, No. 411) that during the present opposition of Saturn he has detected a partial division in the B- or middle-ring of Saturn not previously seen by him. The new division is said to be 0".7 from the inner edge of the B-ring, and the width about the same as that of the Cassini division. The fact that the new division is not conspicuous, like Cassini's, suggests to Prof. Schaeberle that the separation is not yet complete, and that the interval which he has detected contains matter which reflects light to such an extent that unless the conditions of seeing are very good it is indistinguishable from the general appearance of the B-ring. He has not been able to see the division between the middle-ring and the crape-ring, announced by Herr Brenner. Writing to the *Observatory*, Herr Brenner says:—"On August 27 I discovered two new divisions in the rings of Saturn; the one between the Manora division and the inner edge of the crape-ring is identical with the Struve division, discovered in 1850, and seen again in 1887 by Strauert. The other division, between those of Encke and Cassini, is quite new, and was never before seen. Nevertheless it was more conspicuous than the Encke division and more extended too." In connection with these announcements it may be worth referring to a paper by Captain H. Kater, in the *Memoirs* of the Royal Astronomical Society (vol. iv. p. 383, 1831). Enough divisions in the outer ring are there described and figured to furnish astronomers with material for contemplation for some time to come.

A NEW METEOR PHOTOGRAPH.—We are glad that increased attention is being given to the photography of meteors. Prof. E. E. Barnard states (*Astronomical Journal*, No. 412) that he exposed photographic plates in two cameras on the mornings of August 10, 11 and 12, with the object of securing meteor trails. Only one meteor trail was secured, but this was a very fine one, the full length of the path, about 8°, being recorded upon the plates. The trail commences at R.A. 2h. 59m., Decl. + 23° 7', and ends in R.A. 2h. 59m., Decl. + 32° 0'. The meteor must have been a very bright one, as the trail, which is perfectly straight, is strong and clear. Near the southern end of its path the meteor appears to have exploded, as there is a distinct enlargement of the trail at that point. The path continues a little beyond this in the same direction but fainter, and there is evidence of a second minor explosion about 1° from the first. It may be remembered that in the case of Mr. Butler's meteor photograph, reproduced in NATURE two years ago (vol. liii. p. 131) the meteor underwent a change of direction after it exploded.

Prof. Barnard has sent to the Royal Astronomical Society a copy of the photograph obtained with each camera.

THE ALLEGED FORMER REDNESS OF SIRIUS.—This subject is discussed at length by Dr. H. Samter in the September number of *Himmel und Erde*, and answered in the negative sense so far as human records are concerned. Besides some ambiguous references of Ptolemy and Aratus to the colour of the star, there is Horace's reference to *rubra canicula* or red dog-star, and Pliny's description of the colour as redder than Mars. But the

*canicula* may just as likely be Procyon, and the redness may have been due to its low altitude at the time of its first appearance in the sky after sunset. Hyginus and Germanicus Caesar use the word *candidus*, that is, bright or shining white, in referring to the colour of the star. It is at least strange that Mars should have been so constantly, and Sirius so sparingly, referred to as red, and that not Sirius, but Alpha Scorpii should have been referred to as Anti-Mars (Antares). On the whole, Dr. Samter thinks the evidence is in favour of a very nearly white colour, as at present. The real explanation of the matter probably lies in the fact, pointed out some time ago in these columns, that the ancients observed Sirius at the heliacal rising, when it necessarily appeared red.

### THE NEW GOVERNMENT LABORATORIES.

THE new Government Laboratory is built on a rectangular plot of land, 120 feet long by 65 feet wide, in Clement's Inn Passage, adjacent to King's College Hospital.

The exterior of the building is faced with red bricks with bands, corners and windows of Portland stone, and consists of four floors surrounded by an area whose retaining wall is faced with white glazed bricks. Central corridors run from end to end of the building on the basement and ground floors; a staircase at each end and a hydraulic lift give access to the various floors. The main entrance faces the gateway leading into Clement's Inn, and at the opposite end are two entrances for service purposes.

The architectural treatment of the first and second floors differs wholly from that of the ground-floor and basement: the entire central portion of the building forms one large room, 49 feet long by 43 feet wide, lighted by eight lofty mullioned windows and a flat-roofed dormer lantern, the open roof being carried on light iron principals. The floor of this room is about five feet above the ceiling level of the ground-floor rooms, and the space thus gained is utilised in raising the height of the principal rooms on the ground-floor, and as a duct, seven feet wide, below the floor of the central room, for holding the heating appliances, and water, gas and drainage pipes. The remainder of the building is divided into two sections by this room: each section consists of two floors with flat asphalted roofs, one roof carrying the water cisterns, and the other affording space for operations which it is desirable should be performed in the open air, a spiral iron staircase affording the necessary access.

The ground-floor corridor has a mosaic pavement, and with the exception of a few rooms in the basement, which, as well as the other corridors, are "granolithic," all the rooms have pitch-pine parqueterie flooring. The interior walls of all the laboratories, store rooms, and corridors, are faced with white glazed brick relieved by an ornamental dado of coloured glazed bricks; the only rooms with plastered walls being those intended for office purposes.

The basement floor contains a boiler house, engineer's workshop, store rooms, a mechanical laboratory, and laboratories for bacteriological work, water analysis, standardising scientific instruments, and verifying the hydrometers and saccharometers used in the Revenue Service. The mains for gas, water, and steam are carried along the corridor immediately below the ceiling, and are supported on light iron girders, every pipe being in view throughout its entire length. Underneath the corridor floor is the main ventilation shaft, a long chamber seven feet square, with which the several ventilating shafts and fume flues are connected. A powerful fan, worked by a silent one-horse engine, keeps up the air circulation and discharges the foul air into an upcast shaft surrounding the boiler furnace flue. A "return clean water main" also runs under this corridor floor, and after picking up branch mains from all the working laboratories, ends in a concrete tank of 7000 gallons capacity. Stores for house and steam coal, and a room for refrigerating machinery, have been constructed outside the main building, the former under the street pavement and the latter also partly in the area, which is here roofed in with Hayward's lights.

The main entrance leads into the ground floor, which contains on the left a waiting-room, the principal's private office, the reference library, and the research laboratory (a room 34 × 17

feet); on the right are the Crown contracts laboratories, a suite of three rooms having a total length of 69 feet by 17 feet, the private office of the deputy principal, and the reference sample laboratory, which is 28 feet long by 20 feet wide.

The chief feature of the first floor is the main laboratory, the central room already mentioned, adjoining which is a dark room for polarimetric work and a refrigerated room for storing samples. A short corridor leading to the main staircase gives access to two rooms for the superintending analysts and to the two tobacco laboratories.

The second floors contain photographic rooms, typewriter's office, museum, and four laboratories.

The building is lighted throughout by electricity obtained from the Strand Corporation, whose continuous 100-volt current is also employed for working various motors.

Rooms intended for offices have open fireplaces fitted with Teale's slow combustion stoves; the remaining rooms are heated by passing steam through iron radiators. In the main laboratory the radiators are below the floor in the central duct, and are connected with the external atmosphere by air channels covered with slate slabs, and the warm air enters the room through iron gratings which cover the duct. To prevent draught a copper steam pipe runs all round the base of the dormer lantern; in all the other laboratories the radiators are on the slate slabs covering the air channels, usually in the centre of the room.

For ventilation, four large air shafts run from the upper corners of the main laboratory down to the basement, where they connect with the main shaft already mentioned, and in every room through which they pass there is an opening controlled by a "hit and miss" grating. The mouthpieces at the back of all the evaporation and draught closets are contained by downward flues into the same main shaft.

The water supply is from the New River Company's high-pressure main, branches from which run throughout the building direct to the various tables for working filter-pumps, turbines, and similar contrivances. For other purposes the water is stored in three cisterns on the roof, having a total capacity of 7000 gallons, from which it is distributed for boiler feed and ordinary laboratory work. To economise water, all the working tables are provided with special drainage outlets, which are connected by a system of iron pipes to the "return clean water main." The water discharged through this main into the concrete tank is pumped up into the service cisterns on the roof; the only water run to the drains is that used for cleansing purposes.

For ice making and refrigerating, one of Messrs. J. and E. Hall's carbonic anhydride refrigerating machines is employed, in which "brine" is cooled by the evaporation of liquid carbonic anhydride in copper coils surrounded by the brine, the cooled brine being used for making ice, cooling water, and for maintaining a low temperature in the sample store adjoining the main laboratory. This store is an insulated chamber with hollow walls, made of steel plates placed immediately in front of the insulation, through which the cooled brine circulates. The main laboratory has been specially designed for the evaluation of spirituous liquors, in connection with which a great desideratum is a supply of water fairly uniform in temperature all the year round. In the summer months the temperature of the ordinary water is lowered by passing it from the cisterns on the roof down to the refrigerating machine-room, where it runs through a cooler fitted with coils through which cold brine circulates. From the cooler the water is pumped by a centrifugal pump up to a special insulated cistern holding 1000 gallons, from which all the tables in the main laboratory are served.

The working tables have mahogany tops 1½ inches thick, with fronts and ends of varnished Riga wainscot. In all rooms, except the main laboratory, the tables are placed against the outer walls immediately underneath the windows; they stand on a 3-inch plinth, which is protected by a recessed toe space and by making the table-top overhang 3 inches. They are uniformly 37 inches from floor to top of table, with a row of cupboards above the plinth topped by a single row of drawers. A space between the removable backs of the cupboards and the walls serves for carrying the water-pipes and draining troughs.

A white ware sink (12 × 9 × 4½ inches) is provided for each pair of workers, and behind it is a water standard fitted with Kelvin tap delivering into the sink, and side pipes with lever cocks