

protected cruisers (about \$11,000,000 altogether) is not being expended on more up-to-date and serviceable vessels. For the same sum we might have secured four first-class battleships, or four armored cruisers of the "California" type, a squadron of infinitely more value than the abnormal vessels to the construction of which the nation is now committed.

THE HEAVENS IN AUGUST.

BY HENRY NORRIS RUSSELL, PH.D.

The steady eastward march of the sun through the skies brings the same constellations to the meridian ever earlier in the evening. The aspect of the fixed stars in one month is repeated in the next, with the sole difference that they rise and set two hours earlier by clock time, so that the description of the heavens as seen at 10 P. M. in the middle of July holds good also for 9 P. M. on August 1, 8 P. M. on August 15, and so on (except, of course, as regards the moon and planets).

There is, therefore, no radical change in the appearance of the skies from month to month. The constellations near the meridian are a little farther west than they were a month ago, some old friends among the stars have vanished in the west, and new ones have risen in the east to take their places, and that is all.

At 10 P. M. on August 15, Cygnus, Lyra and Aquila are near the meridian, the first two being almost overhead and the third farther south. Hercules and Ophiuchus are to the west of the meridian, with Arcturus and his accompanying stars still lower, and the paws of the Great Bear are just touching the north-western horizon. Between Vega and the Dipper is Draco, bending his ungainly length around the Little Bear.

The zodiacal constellations offer little of fresh interest. Scorpio and Sagittarius are passing westward, carrying Jupiter and Saturn with them. Capricornus, Aquarius and Pisces are all inconspicuous, and the triangular head of Aries is only just rising.

About half-way up the eastern sky is the great square of Pegasus, which can be recognized at a glance. From its northeast corner runs a curving row of second magnitude stars, spaced at intervals about equal to a side of the square.

The first is Beta Andromedæ, and the second Gamma of the same constellation, while the third is Alpha Persei. Above Beta Andromedæ is a small star, and as far again in the same direction the great nebula of Andromedæ can easily be seen with the naked eye. Forming a right-angled triangle with Alpha Persei and Gamma Andromedæ is the "Demon Star," Algol, one of the most remarkable known variables.

The Milky Way spans the heavens completely, passing through the zenith. There is a condensation in it between Cassiopeia and Perseus which is worth looking at with a field glass or *à fortiori* with a telescope, as it is a very fine star cluster.

THE PLANETS.

Mercury is morning star in Cancer throughout August. He is too close to the sun to be seen in the earlier part of the month. On the 18th he reaches his greatest elongation — 18° 32' — which is much less than the average, because he is near perihelion. In consequence of this he rises only about an hour before the sun, and though bright will be hard to see.

Venus is also morning star in Taurus and Gemini, rising about two hours before sunrise on the 1st, and three hours on the 31st. On the 13th she attains her greatest brilliancy, and is easily visible in the daytime, though difficult to find.

While speaking of Venus, it should be noted that the recent spectroscopic investigations of Belopolsky indicate that she rotates on her axis in a period of about a day—not in the much longer period of 223 days, as has recently been believed.

Mars is morning star in Taurus and Gemini, and rises from four to five hours before the sun. He is steadily growing brighter, but is still twice as far off as the sun, and is, therefore, faint.

Jupiter is evening star in Scorpio. On the 25th he is 90° from the sun, and comes to the meridian at 6 P. M. The present month is a favorable time for telescopic observation of the eclipses and transits of his satellites, as the eclipses take place at their greatest apparent distance from the planet. About 9 o'clock on the evening of the 25th the 2d satellite is in transit, and the 1st and 3d are occulted by the planet, so that Jupiter will appear to have but one satellite,—a rather unusual occurrence.

Saturn is in Sagittarius, and is well up in the south at sundown. His rings are very widely opened out, and with his satellites they form a magnificent telescopic spectacle.

Uranus is in Scorpio, not far from Jupiter, and Neptune is morning star in Taurus, but invisible to the naked eye.

THE MOON.

First quarter occurs on the afternoon of the 3d, full moon on that of the 10th, last quarter on the morning of the 17th, and new moon on that of the 25th. The moon is nearest to the earth on the 12th, and

most remote on the 27th. She is in conjunction with Jupiter on the morning of the 5th, Uranus the same afternoon, Saturn on the morning of the 7th, Neptune on the evening of the 19th, Mars on the afternoon of the 20th, Venus on the morning of the 21st, and Mercury on that of the 23d.

AN INTERNATIONAL EXHIBITION AND RACE-MEET AT CHICAGO.

An automobile exhibition and race-meet will be held at Chicago in September, under the auspices of The Inter-Ocean Publishing Company. It will be remembered that the first automobile race in the United States was conducted by The Inter-Ocean, in 1894. The tests, races and exhibitions will be held at Washington Park from September 18 to September 22 inclusive. The events will take place in full view of the spectators. A brilliant system of electric lighting is to be arranged for night racing. The grand stands have a capacity of 50,000 and the transportation facilities are unexcelled. It is thought that the events will attract international attention. As at present arranged, they will be as follows. Suggestions as to changes may be made up to August 15, when the programme will be finally adopted.

On the opening day there will be a general parade of nearly five hundred vehicles, with standing and moving exhibition, when the general public will be allowed to examine the vehicles in and out of the buildings, and ride in them in the parks. Prizes will be given to the manufacturer presenting the greatest number of practical designs and to the manufacturer having the greatest number of automobiles in line. A special prize will be given for the most practical design of wagon for general purposes.

The second day will be the commencement of the tests for general practical utility. All the different forms of power will be classed together and vehicles of each different rating of power will be awarded honors and prizes in competition only with vehicles of like size. The carriages or wagons entered for practical utility must be of standard design, construction and equipment as regularly catalogued by each manufacturer. In tests of practical utility each manufacturer will be allowed to enter three vehicles, one vehicle carrying two people and operated by the owner of the vehicle; one vehicle carrying four or six people and operated by the owner or servants in livery; one vehicle designed for commercial or merchandise delivery purposes, carrying a load of not less than 1,000 pounds with driver, nor more than 2,500 pounds with driver. The award will be made in the ratio of load and weight of vehicle.

In testing the practical manipulation of vehicles, a series of dummy figures will be introduced on the tracks, some will be constantly shifted, some remaining permanent as the vehicles pass through them, causing frequent and sudden stops and turnings, to show the safety of the vehicles in crowded thoroughfares and the dexterity which may be obtained by any intelligent operator. There will also be provided a section of extremely rough and uneven roads, with mud and chuck-holes, and country road ruts, with logs, stones and obstructions, requiring short stops and turns, and including both up and down grades, corresponding to country roads and city streets. These tests will be of inestimable value to the automobile industry.

The points will be as follows: Speed (to be determined on a five-mile run), 20; elegance of carriage design and practicability, 20; best arrangement of brake and control of speed, 20; best climbing of grades, 20; best and surest safety devices for operating vehicles either on grades or level, 10; best, simplest and most easily accessible mechanical construction, 10.

There will be a hill-climbing contest, also a contest on an incline and decline grade, in which practicability and controllability of the vehicle will be demonstrated.

There will be a heavy draught contest, open for all heavy draught motor trucks built for commercial hauling. Their points will be as follows: Construction, 20; power, 20; carrying power, 20; design, 20; control, 20.

After decisions have been rendered on tests covered by the above rulings, the prize winners of each class will be allowed to open competition on: Carriage design for general practical utility counting 30 points; easiest manipulation, 30 points; safety and emergency devices, 20 points; cost of power per ton mile, 20 points.

The cost of electricity is to be based on 4 cents per kilo-watt hour; cost of gasoline or oil will be based on the current price per gallon.

Manufacturers will be obliged to give the normal rated power of each vehicle, and a special prize will be awarded for the greatest range of useful power obtainable above and below the normal rating. One prize will be offered for the most original conception in an automobile as regards modification, and changes in carriage designs that will still leave the vehicle acceptable and practicable. This is without reference to power.

Four races will be run, in which speed alone will

count for 100 points. Each manufacturer is to enter two vehicles of such design and equipment as he may select that shall pertain to the class of vehicles manufactured by him.

There will be a race of 20 miles between steam vehicles; a race of 20 miles between electric vehicles; a race of 20 miles between gasoline vehicles, and any disabling of a vehicle during a race will disqualify it for further participation during that race.

The prize winners of each race will then enter into a "free-for-all" of 40 miles, where speed will count for 100 points.

The time will be kept for each mile and an extra prize will be given to the vehicle making the best single time during these races.

There will also be a 200-mile "free-for-all" fast track race for owners carrying four grown people; also a 200-mile track race carrying two people.

Another important feature of the exhibition will be a mail race. Four mail boxes will be placed at equidistant points around the race track, and ten miles will be run, making forty stops in all, to collect the mail. Each driver will be obliged to stop at each box, unlock it and take a card from the same and lock it again. The vehicle making the best time in the forty stops in the shortest space will be awarded the first prize, and the driver will receive a bonus.

There will also be a ten-mile practical road race on a rough track constructed to represent an average country road, the carriages to hold four people. There will also be a ten-mile road race, the vehicles carrying two people.

An additional prize will also be given for a design for a mail wagon which shall be the most practical and the best adapted for the collection of mail matter from street boxes.

There will be a 500 mile smooth track road race "free to all," to be run on the fourth day, commencing at 5 A. M., 100 points being for speed. Exhibition performances will take place on the inner circle while this race is in progress. This will be followed by an automobile transfer express race, which is to be run five miles, taking a swinging bag from suspended hooks from four points around the track without stopping. The man coming in first with twenty of these bags will be awarded the first prize. The test will be open to all classes of vehicles.

Ladies' day will be full of interest, as ladies will have the track exclusively in a series of races, which will be run with carriages and not racing vehicles. In addition to this, the most dexterous lady operator in dodging the dummy figures, climbing grades, and general manipulation of the vehicle will receive a special gold medal. A gold medal will be awarded the operator of vehicles of the commercial and catalogue type who performs the most difficult tests and practical movements.

This will be immediately followed by an exhibition of vehicles owned exclusively by private parties, which will be open and "free for all" in a four-mile race. A second prize will be given to the most dexterous operator, and a third prize to the best appearing vehicle. This race to be followed by an open and "free-for-all" exhibition of fancy and trick driving. There will also be a pulling contest, free for all, the award to be made in ratio of weight, power and performance.

To demonstrate the value of the merchandise delivery wagon a race of three miles will be run, having eight stations on alternate sides of the track, at each of which must be left a package weighing not less than 20 pounds. Each wagon will be allowed a driver and assistant, as is the usual practice on such wagons. The wagon will not be required to come to a full stop, but the winning vehicle must arrive at the finishing point with all of the packages delivered and the driver and assistant in their proper places.

After the races are over a grand prize of \$1,000 will be offered to the most valuable invention in automobiles that shall have been practically demonstrated during the week of the exhibition.

Among the novel features on daily exhibition will be a passenger vehicle which will be given one-eighth of a mile start of a second vehicle, the latter overtaking the first, and a complete exchange being made of drivers, baggage and passengers, with the vehicle running at full speed. This is considered one of the most difficult feats in automobile driving. This will be immediately followed by a race of automobiles running backward at full speed. The latter race will be open to any and all kinds of vehicles.

In all, \$10,000 is to be awarded in prizes, and is to be apportioned to the events at the time of the final adoption of the programme. Bands of music will be in constant attendance and superb decorations will make a most brilliant scene.

The exhibition and races will doubtless bring large numbers of persons from all parts of the country to witness them. The races have been arranged with special attention to bringing out the good points of automobiles, and to assist in developing the industry. In this respect the regulations are most admirable and the results of the races will be looked for with the greatest interest.