SUNDAY MORNING

THE TORONTO WORLD

COMPANY NO 1 OF THE TORONTO PUBLIC SCHOOL CADETS.

This company is drawn from the larger boys of the Wellesley and Church schools, and is thoroly representative of the cadet companies in the local schools. They wear the red coats of the infantry and are very proficient. Reading from the left of the picture those standing are: H. Groves, R. Burch, Sergt; W. Wattie, J. Rankin, Corporal; A. Porter, E. Norris, R. Guscott, S. Collins, L. Burkholder, R. McIntosh, A. Gardner, A. Perry, Sergt.; W. A. Anderson, 2nd Lieutenant; W. Bothwell, Captain; H. Miller, 1st Lieutenant; S. Murray, F. R. McGiffin, G. Kidney, R. Latimer, G. Laidlaw, D. Shields, W. Devitt, Sergt.; H. Trowern, Corporal; L. Anderson, Corporal; R. Williams, Sergt.; W. Gilbert Those kneeling, reading also from the left are: G Loney, G. Ronan, C. Taylor, G. Thompson, N. Trotter, R. Eccles, D. Cockb urn, K. Winan, W. McKnight, A. Lye, J. Laing, H. Flinn, J. Bastedo, Corporal; P. Taylor, H. Wilson, S. Brownell, L. Townley, S. McEachern, H. Dovenor, R. Scott, G. Harcourt, R. Lukey, G. Campbell, D. Maunder, W. Lee, W. Davies, J. McKay.

 Thirteen degrees, and the result would probably have been fatu to make the set and the se eyes being blinded to it by the glare of the sunlight in our atmosphere. For the same reason we cannot see the stars in the daytime. A screen held between the eye and the sun does not help us, because the atmosphere all around the screen is still illuminated by the fuil sunlight. The screen would have to be placed beyond the atmosphere, far out in space, to produce the de-sired effect. Now here nature has singularly favored us. The moon, an opaque globe thru which the sun-

study the state of the solar system, o which his globe is a part, and of the sun, which is the centre of power for that system, he must look ahead and around him, peering as far as he can across the ocean of space thru which his ship is driving. This duty is performed by the astronomers who study the out-er universe. Thus Wilson's Peak, when its great photographic instruments are in full operation, will become like a newly-erected masthead, from which watchers immediately begin to keep an outlook in every direction. Any know ledge that they may be able to attain will be of use in the great final pro-blem. We know already that the solar system is hurrying thru space at a speed of 300,000,000 miles, or more, per year; we know that space is full of other systems, millions of them, all more or less resembling our own; and we know that all these systems are con-nected by some grand scheme of unifi-cation. But just what that scheme is we have yet to learn. And we have also to learn whether our little lives. 'rounded with a sleep," and subject the vagaries of the star we call the sun, really sum up our connection with id us, or whether the he universe aro best promise of immortality may no rest upon the illimitability of space and the innumer When the ecl eness of worlds. pse reaches an obs vation party it comes with a speed and suddenness that is appalling. There is a dimness of light which precedes the eclipse, but this lasts for some time and gives no ir the midst of this ediate warning. In imness or penumbra some neighboring hilltop turns black in

When the Sun's Eclipsed were begun. But one such experience, argument of the sun product of the sun product



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JUNE 18 1905

ing the most particular of dressers do some extra figuring before paying the custom tailor his "fancy" prices for garments

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an opaque globe thru which the sun-light cannot penetrate, happens to be of such a size and situated at such a of such a size and situated at such a distance from the earth that when, as occurs at regular periods which as-tronomers can predict, it comes ex-actly between the earth and the sun, it just covers the sun's disk, leaving all the surrounding space uncovered. When this happens the corona gleams into view, an amazing spectacle, which into view, an amazing spectacle, which all who have seen it agree in Saying is the most imposing sight that the whole round of natural phenomena af-fords. Unfortunately, a total eclipse cannot be seen from all parts of the earth at once. It is only the point of the conical shadow of the moon that reaches the earth, making a dot of dealwave from fits to a bundred miles reaches the earth, making a dot of darkness from fifty to a hundred miles in diameter. From the effects of the motion of the moon in its orbit, and the rotation of the earth on its axis, this dot appears drawn out into a line. or path, called the path of totality (ly-ing for thousands of miles across the earth's surface), and only within this narrow path does the sun appear to-tally eclipsed. Outside that path the eclipse is only partial, and consequent-ly of no scientific importance. The path of totality varies for each successive eclipse. On this occasion it will begin southwest of Hudson Bay, traverse Labrador, cross the Atlantic Ocean, traverse Spain south of the Pyrenees, cross the Mediterranean Sea and lie along the northern border of Africa, ending in Arabia. The observers must go to some point along this path. Some will be stationed in La-brador, many in Spain and many in Tripoli. They will have two kinds of instruments, one kind varying with the preferences and particular objects of each party of observers, the other kind common to all of the observers and utterly beyond their control. The latter instrument is the moon herself—the in-

spensable screen furnished by nature



REWARDED FOR HEROISM.

Mr. Alexander Cameron of Lindsay, the first Canadian to receive a Carnegie medal for heroic conduct. Mr. Cameron saved a boy from drowning, jeopardizing his own life in so doing.

tively electrified matter radially out brought to light, for it is evfrom the sun. The earth in its con-stant travel thru space cuts across the that the heavens are filled with stustant traver thru space cuts actors actors the final travers are finded with stat path of these particles. It is supposed that the finely-divided particles may reach the earth in about two days. They become caught by the atmo-sphere and constitute an electric cur-science is developing for his use. These rent jet in the upper regions of the same which will naturally affect the magnetic needles on the earth's surmagnetic needles on the earth's_sur-face. This disturbance may persist for a certain time after the solar jet has swept past the earth." Among the minor, and yet highly-interesting, observations that will be pressed with eager haste during the three or four minutes that the sun is teally bidden next August is the

totally hidden next August is the search for the myserious planet. "Vul-can," supposed to have been seen half a century ago, but which has ever since ' remained hidden-if it real-there the "formlessness" is visible in ly exists—in the overpowering the strange, indescribable shapes of the light close to the sun. Photographs of the darkened sky around the sun are into suns and worlds. There the broodexpected to reveal any unknown plan-et or planets that may chance to be huge black gulfs of emptiness, yawn there. But even more important than ouestions of this sort is the great un-derlying problem, whose nature I have the face of the waters."

deriving problem, whose nature I have indicated in the beginning, which re-lates to the degree of stability possess-ed by the sun as a centre of radiant energy. What light can eclipse obser-vations throw upon the variability of the face of the waters.⁴ Even this strange Biblical expression seems less mysterious when studied in the light of Prof. Barnard's and Prof. Kteler's photographs, for they clearly indicate that some great split of creating the face of the waters.⁴ the sun's radiations and upon the ques-tion whether that variability is in-creasing, and threatening to become at half completed stars. The results of creasing, and threatening to become at hair completed stars. The results of last so great as to endanger life upon the earth? Here it must be stated that other observations besides those which are only possible during a total eclipse come into play. The mightiest battery that science has yet brought to bear upon the sun



REV. WILLIAM D. ARMSTRONG, M.A., PH.D. Moderator of the Thirty-first General Assembly of the Presbyterian Church of Canada Dr. Armstrong is pastor of St. Paul's Church, Ottawa, and managing director of the Ottawa Ladies' College.

legged spinner, which proves such an annoyance to neat housewives, is an indispensable ally of the astronomer in observations that stand at the fore-front of progress in the conquest of the secrets of the universe. The combination of all these observa-tions may result in an enormous ad vance in man's practical knowledge of his place in the universe, and of the influence to which he is subjected by the radiant energy of the sun. Situat ed as he is on the earth, he is like one afloat upon a boundless sea. The whole solar system is but a point in the universe cand its engine. His first duty relates to the mastering of the secrets of that engine. He cannot control it, but he can understand it. He can learn if it is running smoothly, if it is sub-ject to important variations, if the fires are getting low, or are burning bright. ict to important variations, if the fires like suns. Trees, houses and all burst are getting low, or are burning bright-er. Thus he can foresee, to a certain a carpet of light which looks like a er. Thus he can foresee, to a certain extent, the future, and it is not incon-ceivable that, armed with such know-ledge, he might be able to fortify him-self against the results of changes which, unforeseen, would prove fatal to him. Professor Lowell believes that the inhabitants of the planet Mars have already been compelled, thru the chang-es that have gradually come about in Bacos' Little loce

es that have gradually come about in the condition of their globe, to inter-fere on a large scale with the arrang-Bangs' Little Joke. John Kendrick Bangs once ran actoss form the surface of their planet in such form the surface of their planet in such a way as to meet the new state of things that confronts them. It is imaginable that similar emergencies might occur on a planet like the earth situated neur-er to the sun than Mars is. If the sun is cooling, the more distant planets would be likely to suffer first from the deficit of heat, and from whatever other consequences might result other consequences might result. But, if it is man's intellectual duty to December, 1899."



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