

Observe Eclipse.

ST. JOHN'S, Sept. 9.—(Continued from page 1.)

Leading astronomers from all over the world, many of whom have traveled many thousands of miles to observe the eclipse, are gathered at St. John's to observe the eclipse which occurs on September 21. Professor A. Chant, of Toronto and Dr. R. K. Young, of the Dominion Astrophysical Observatory at Victoria, B.C., Canadian scientists who will observe the eclipse. They arrived at St. John's on the 10th of September. The chief instrument Professor Chant has is a camera with a six inch aperture and a seven foot mounted equatorially on a telescope and driven by an electrical clock. Great interest is taken in the eclipse this year on the opportunity presented to the astronomers to obtain conclusive evidence either for or against what is known as the theory of relativity.

SPECIAL TELESCOPE.

The aid of a specially constructed telescope it will also be possible to observe the corona, the remarkable appendage of pearly white color extending out some 200,000 or 300,000 miles which can be seen only when the sun is completely hidden by the moon. The Canadian Astronomers were joined at Perth by the British Government Astronomers and by a party under W. W. R. Bell, Director of the Lick Observatory in California, the latter an experienced eclipse observer. Professor Einstein it was thought would observe the eclipse from Java. A Dutch party from Java will observe on Christmas Island where the Greenwich party will observe their positions. The path of the eclipse begins in Abyssinia, on the east coast of Africa, passes eastward over the Maldives Islands, crosses the Indian Ocean, and ends on the northwest coast of Australia. Astronomically, the best point at which to observe the eclipse and take the photographs of the light from the stars beyond the sun, is the duration of totality there being five minutes eighteen seconds. The altitude of the sun above the horizon is greatest, 58 degrees; and the weather conditions are most favorable. The coast of the Great Sandy Desert is being virtually rainless and clear during September.

THE EINSTEIN THEORY.

A subject that has been responsible for a large amount of scientific discussion and some public interest in the past few years is what is known as the Einstein theory. This theory of light is influenced by a large amount of light and is deflected by this theory, by the way, did not originate with Einstein who is a German mathematician, but was collected by him from the observations of other scientists in past centuries. It was being the law of gravitation that a body left without sustaining support falls toward the earth at a fixed and established rate. However, Einstein's assertion is that a body like the sun will pull a body toward it in proportion to the light it emits. Were it possible to observe the enormous amount of light from the sun, it would be seen projected on a background of stars just as we see Sirius (which is a larger star than ours) amongst the neighboring stars. The earth makes a complete revolution in a year so that it appears to follow a well-defined track (known as the ecliptic) around the sun, with the result that it sometimes passes north, sometimes south, and sometimes east, and sometimes west.

THE ECLIPSE.

The moon revolves around the earth in a nearly circular orbit, but it is really somewhat elliptical. It is with the result that it sometimes passes north, sometimes south, and sometimes east, and sometimes west. Should it happen that the moon passes between the sun and the earth at the point which the sun occupies it passes between the sun and the earth, covering that body, resulting in an eclipse of the sun. On such occasions when the moon is in the line of the sun, the sun is shut out by the moon, and the surrounding stars appear in the sky. The eclipse which takes place on September 21 the sun will be visible about half way between the position of Jupiter and Saturn, the brightest star in the constellation of the zodiac. It may be recognized as the star which is in the line of the ecliptic. Members of the British and Australian parties have completed a series of photographs of this part of the sky by means of large telescopes which will be taken at the eclipse.

ECLIPSE.

ment for the purpose of observing the eclipse. It is a very important part of the work of the astronomers. The eclipse will be taken at the eclipse.

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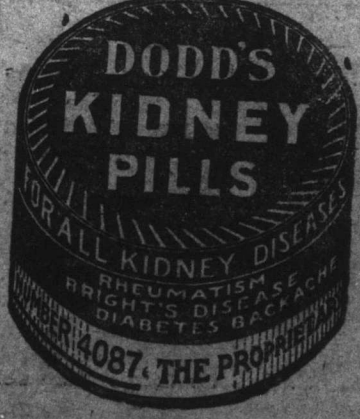
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THE CORONA.

Perhaps a few details of what is known as the corona referred to as the commencement of this article, may be of interest. The corona is not arranged in concentric layers like an atmosphere, but is made up of complicated systems of streamers in general stretching out radially from the sun, but often curved and somewhat resembling aurora. Many of those who have seen it declare that

its finely detailed structure resembles the Great Nebula in Orion. The coronal streamers often have their bases in the regions of the active prominences. That they are in some way connected with activity on the sun is shown by the fact that the form of the corona changes in a cycle of about eleven years the same as that of sunspot activity. When the number of spots is at a maximum the coronal streamers radiate from all latitudes almost equally. As the maximum passes, the streamers gradually withdraw from the poles of the sun and extend out to greater distances in the sunspot zones. When the number of spots is at a minimum the corona consists of short rays in the polar regions curved away from the solar axis and streamers extending out in the equatorial plane. At present

the sun is near one of the periods of minimum sunspot activity and a corona of the latter type will probably be seen. According to present ideas, the corona consists of dust particles, liquid globules, and small masses of gas which are widely scattered. From what is known it has been calculated that there are one cubic yard of dust to every fourteen cubic yards of the corona. The excessive fact that comets have plunged through hundreds of thousands of miles of it without being sensibly retarded. It is these small particles that reflect the sun's light and allow us to see the details of that beautiful object. The form of the corona shows that its condition is not at all similar

to that of an atmosphere like the one surrounding the earth. Its density is denser towards the sun and is appreciably slow, though, doubtless, the pressure of the sun's light, and the effect of electric forces upon the small particles of which it is composed are opposed to the force of gravity. The radial structure and periodic variation in form are without satisfactory explanation. The opportunity of studying the corona is one of the reasons for the great scientific interest in eclipses.

BRITISH EXPEDITION.

The British expedition which is making observations on Christmas Island is under the direction of H. Spencer Jones, chief assistant at Greenwich Observatory together with J. P. Moulton who discovered the eighth satellite of Jupiter. Most exact instruments, capable of registering the minutest detail of the eclipse of the sun, have been sent out from England and have been erected. The great telescope included among these instruments has been handled almost exclusively by amateur workers under the supervision of members of the expedition. The photographs taken on September 21 will be used in connection with a set taken in South America and West Africa in May 1919, which indicated that the Einstein theory was correct. However, the reliability of the instruments used on that occasion has been questioned, hence the proposed observations. The astrophysical telescope that has been transported from Greenwich to Christmas Island is probably the most highly valued of the numerous treasures of the British Observatory. In previous similar experiments it has been found necessary to point the instrument away from the sun, the photographs having been secured through the use of a mirror, which allowed for a slight miscalculation and fault in the results. In this instance the Christmas Island camera will point directly at the sun and through the use of a delicate mechanism will follow the sun through the eclipse. Another British expedition will make observations on the Laccadive Islands. This expedition is under the direction of Professor J. Evershed, director of the Kodaikanal Observatory, a British institution in India. The expedition from the United States is under the direction of Dr. W. W. Campbell, director of the Lick Observatory at the University of California, on Mount Hamilton, and left San Francisco on Sept. 1 bound for Perth, Australia, where they were transhipped to a vessel of the Australian navy placed at their disposal by the Government of Australia and proceeded to Murray's Beach, on the rim of the Great Sandy Desert, on the North-Western shore of Australia landing in surf boats at a point about 900 miles north and east of Broome, the last landing-place on that place and only a small village settlement. The fruits of the elaborate and expensive preparations will mean much to the world's store of astronomical knowledge, and it is hoped that the occasion of the eclipse will not be hoodwinked by rainy weather, at least not for a few hours before and after the phenomena.

An Unsatisfactory

Victory.

September 8, 1815, was a glorious date in the annals of Scotland, being one which witnessed sorrow and dismay all through the country, and which for many years was looked upon with regret for it was the day upon which was fought the famous battle of Flodden Field. At one time in the fight it looked as though the Scots had a very good chance of winning, for the right wing of the English army was utterly defeated, but the men under the Earl of Huntly and Home, instead of following up their victory, abandoned themselves to pillaging the baggage of both armies. The real battle was fought in the centre, where King James, surrounded by the flower of the land, fought bravely and stubbornly against the attacks of the Earl of Surrey. The result of this battle—an example of gigantic folly on the part of James IV.—was the death of the King, and ten thousand men, and of these the great proportion were of high rank, the remainder being composed of the gentry, the farmers, and the landed yeomanry, who disdained to fly when their sovereign and his nobles lay stretched in heaps around them. Besides the King, there fell the Archbishop of St. Andrews, thirteen Earls, two Bishops, fifteen Lords, and Chiefs of Clans, and five Peer's sons. There were few families of note in Scotland which did not lose one relative, while many had to bewail the death of all their men folk. The English though ably led by the Earl of Surrey, were at the end of the day so crippled that they were unable to follow up their success, having lost at least between six and seven thousand men; so neither side gained any great advantage from this famous fight. The archers of Blithick, known in Scotland as the "Flowers of the Forest," perished nearly to a man; and to the present day the sweet, and wailing air which is known by that name is almost invariably the "Dead March" used by all Scottish regiments.

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