

News and Views.

IN an article appearing in the supplement to the present issue of NATURE, Sir Joseph Larmor gives a novel interpretation of the local space and time of relativity theory as the absolute space and time of Newtonian dynamics and astronomy. This is clearly not the place to attempt a detailed critical analysis of this important paper, but it may be permissible to summarise a few of the salient arguments. The correlation of past and present astronomical research, as well as the absolute character of atoms, evidenced by spectroscopic research, wheresoever and whensoever they are found, demand absolute time. The welding of local frames of inertia into one coherent fourfold is the business of relativity; the mutual dynamics of masses existing in each local frame proceeds independently by Newtonian principles. The mathematical development is effected by means of the Principle of Least Action, modified to suit the requirements of electro-dynamics and relativity and limited as to form by the necessity of conforming to the postulate of invariance. The requisite formulation of a compound Action-density is first minimised as regards its distribution with reference to variation of structure of the fourfold pseudospace, giving structural differential equations of that fourfold, and then by partial integration the Action is reduced to line integrals along the tracks of the atoms in the fourfold.

By a further minimising of the Action in its new form, Sir Joseph obtains the expression, suitable to the fourfold, of the dynamical interaction of the atoms. An essential feature is that the track of the atom is not treated as an isolated geodesic, determined by the gravitational warping of the pseudospace, of which it is both partial cause and effect, but is connected with other tracks through mutual terms in their potential energy, which are shared between the interacting atoms. In an earlier paper by Sir Joseph (*Phil. Mag.*, S. 6, vol. 45, p. 243, 1923) this sharing of potential energy led to a reduction of Einstein's gravitational constant to one-half of its usual value, because there the time t of the invariant space-time interval of relativity theory was as usual identified with astronomical time. In the article now under discussion, this untoward result is avoided by identifying the local time T , *i.e.* the invariant time t now corrected for convection by means of the Lorentz transformation, with the absolute time of Newtonian dynamics and astronomy. This procedure leads to Einstein's values of the displacement of spectral lines and of the gravitational deflexion of rays of light, but apparently not to his result for the progressions of planetary perihelia, a conclusion regarded by Sir Joseph as not unsatisfactory in view of the uncertainty of the progression of the perihelion of Mercury, as shown in recent astronomical discussions. Moreover, it leads to the proper relation between electric mass and energy relative to the fourfold, a relation which is not substantiated at all except on the present Newtonian scheme.

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APRIL 5 was the centenary of the birth of Lister, physiologist, pathologist, and the 'father of modern surgery,' and elsewhere in this issue Dr. C. J. Martin and Prof. W. Bulloch describe some aspects of his life and work. Celebrations of the centenary commenced in London on April 4, when H.M. The King received delegates from learned societies, universities, and medical societies in Great Britain, from the Dominions and many foreign countries, who are attending the ceremonies arranged by a joint committee of the Royal Society, the Royal Colleges of Physicians and Surgeons, the Royal Society of Medicine, the British Medical Association, and other bodies. Sir Ernest Rutherford, president of the Royal Society, presented an address to the King, to which His Majesty replied, expressing the hope that the gathering of scientific workers for the centenary celebrations would "strengthen the co-operation of all nations in the accumulation of scientific knowledge for the common benefit of the human race." Personal memories of Lister were given by Sir St. Clair Thomson in an address before the Royal Society of Medicine in the evening, and by Sir Watson Cheyne and Sir George Lenthal Cheatele at a meeting in the afternoon of the Listerian Society. On April 5, the official delegates of centenary celebrations were received by the Prime Minister at the house of the British Medical Association, and on the following day a memorial service was held at Westminster Abbey. We hope to give an account of the proceedings in an early issue. Centenary celebrations at Glasgow began on April 1; those arranged at Edinburgh will be held concurrently with the annual meeting there in July of the British Medical Association.

THE text has been issued of the Destructive Insects and Pests Bill, which was introduced into the House of Commons by Mr. Guinness on Mar. 25. This Bill provides that an order under the Destructive Insects Act, 1877, as amended by the Act of 1907, may enable an authorised inspector of the Ministry of Agriculture to take necessary action with reference to any crop infected with an insect specified in the order as being a destructive insect within the meaning of the principal Act, which has been introduced into Great Britain. The Act provides that such an inspector may remove or destroy, or cause to be removed or destroyed, any crop infected, or any crop by means of which the insect is likely to be spread. The Bill also provides for the payment of compensation in respect of any crop removed or destroyed. Until now, very few introduced pests have gained a footing in Great Britain, but the provisions under the new Bill are timely precautions. A few years ago the Colorado potato beetle became established in the Bordeaux district of France and its eradication now seems scarcely possible. The entry of such a pest into Great Britain would constitute a menace to a crop that suffers to an almost negligible extent from insect pests. Notwithstanding precautions against their admittance, foreign pests may secure a foothold, and

the new Bill provides for the necessary action in the event of such an occurrence. The heavy infestation of cherries from some parts of the continent with the cherry fruit fly is another case in point, but happily that insect likewise has not yet become established in Great Britain.

THE first statutory general meeting of the British Mosquito Control Institute was held at the Hotel Cecil, London, on Mar. 30, when the council was elected in accordance with the articles of association approved by the Board of Trade, and by which the Institute is registered under the Companies Acts, 1908-1917, as a company limited by guarantee and not having a share capital. Since the anti-mosquito campaign was begun at Hayling Island about seven years ago, it has become increasingly evident that the work so successfully accomplished there is of more than local interest, and that medical officers of health and sanitary inspectors in many parts of Great Britain, as well as abroad, desire to know how to keep mosquitoes under control. The Ministry of Health can only concern itself with these insects as disease carriers, even though in some districts they make life out of doors almost intolerable in certain months of the year. The Natural History Museum is always willing to identify specimens and give general guidance on methods of dealing with them, but neither it nor the Ministry of Health is concerned with actual field operations by which the mosquito nuisance may be reduced or eliminated. This practical knowledge is, however, available at the British Mosquito Control Institute at Hayling, where there is now a substantial building with laboratory, museum, photographic room, and other facilities for the study of all stages of mosquito life and its regulation. The Institute has been vested in trustees by the founder and director, Mr. J. F. Marshall, whose devoted services in solving problems of mosquito control are widely known and appreciated. Membership is open to all who are interested in the subject, and it is hoped that, in due course, sufficient support will be forthcoming from members and public bodies to make the Institute self-supporting and extend its activities. The council includes among its members Sir Ronald Ross, Sir William Simpson, Sir Arthur Shipley, Dr. Andrew Balfour, Major E. E. Austen, Sir James Crichton-Browne, Dr. G. A. K. Marshall, Dr. C. M. Wenyon, and other entomologists familiar with the mosquito pest, and the chairman is Sir Richard Gregory. The address of the Institute is Hayling Island, Hampshire.

CAPT. C. W. R. KNIGHT'S kinematograph exhibition "Filming the Golden Eagle" should be seen by every one interested in wild life. It began a short season at the Polytechnic Theatre, Regent Street, W.1, on April 2. By means of this excellent film one is enabled to make intimate acquaintance with one of the finest and least common species in the native avifauna of Great Britain. The pictures were taken last year at three different Scottish eyries, and many interesting incidents from the lives both of the young

and of the mother bird are shown. In one case, Capt. Knight was even able to follow the young with his camera for some time after they had left the nest and were able to fly. Perhaps the most striking items are the slow-motion pictures of the adult bird in flight: these include photographs of a trained captive eagle catching the lure in mid-air. In addition to various incidental pictures, there are also some short episodes from the lives of other birds, and those of the chaffinch and of the longtailed-tit are particularly good.

A DISPATCH from Cairo dated Mar. 31, which appeared in the *Times* of the following day, announces the discovery at Saqqara by Mr. Cecil Firth, working for the Department of Antiquities, of a tomb of the Third Dynasty of about 2900 B.C. The tomb, which has a rounded top, is situated on part of the wall about a mile long which surrounds the Step Pyramid. It is thought that it may be the tomb of Imhotep, the architect of the Step Pyramid. An interesting feature of the tomb is the work of low relief on the doors of the underground rooms. Each represents Pharaoh Zoser in the finest artistic style of the period, and although the figures stand out only a millimetre, each muscle is distinctly shown. Twelve magnificent alabaster jars nearly three feet high were found.

DR. GANN'S preliminary account of his explorations during the past winter in British Honduras, which appeared in the *Morning Post* of Mar. 28 and two succeeding days, again provides material of much interest to the student of Central American archæology, although it contains nothing so sensational as his discovery last year of the early dated stele at Chetumal Bay. An unsuccessful search for a bilingual record, which might play the part of a Central American Rosetta Stone, in the first Spanish church at Villa Real, the settlement founded by Davila in 1528, was followed by a visit to a camp on the lagoon On Ha on the northern boundary, where excavations on burial mounds produced evidence of Toltec influence on the Maya in the form of a clay squatting tiger with a human head protruding from its mouth. Northwest from Sac Xan on the Rio Hondo, Dr. Gann discovered great ruins of a temple structure 120 feet high, of which the roofs must originally have been at least 160 feet from the ground. It contained a single chamber 58 ft. long, 18 ft. high, and only 3 ft. wide. Chambers in other buildings were as narrow, or even less in width. The Maya ignorance of the principle of the true arch and their employment of the method of overlapping stones in roofing restricted the width of their buildings to at most 16 ft., but nothing proportionately so narrow as these chambers is known in Central America. Dr. Gann conjectures that they were constructed for ceremonial purposes.

AN exceptional opportunity for the comparative study of folk-dances will be offered by the festival to take place at Bayonne on April 27 and 28. It is being organised by the Musée Basque de Bayonne. A team of fourteen dancers of the English Folk Dance Society will take part in the festival and will give

two performances, one at the annual ball in aid of the funds of the Musée, and the second on the afternoon of the following day, when the English dancers will dance in alternation with teams from the Basque provinces of La Soule, Labourde, Basse Navarre, and Guipuzcoa. As some of the dances from these provinces, each of which has its own tradition, are of a very primitive type, yet in certain features present resemblances to some English folk-dances, their presentation at the same performance should be highly instructive. It will be remembered that Miss Violet Alford, both in the paper read before the British Association at Oxford last year and later, in the autumn, at the joint meeting of the Royal Anthropological Institute and the English Folk-Dance Society (NATURE, Dec. 4, 1926, p. 824) stressed the significance of the *Danse de l'Ours* of Basse Navarre in relation to the meanings of some of the primitive traits in English dances, and she is now engaged in carrying her researches further in the Pyrenees area. The English Folk Dance Society's party, which will include in addition to the dancers any members of the Society and their friends who wish to avail themselves of this opportunity, will leave for Bayonne on April 24.

MR. J. ALLEN HOWE delivered the Friday evening discourse at the Royal Institution on April 1, taking as his subject "The Stones of London." Situated on a sub-stratum of clay and incoherent gravel, London, from its very beginnings, has had to go beyond its borders for stone. In the fragments of the Roman Wall we have evidence that its builders sought the slopes of Hertfordshire for boulders of hard sarsen stone, the Downs and the Weald of Kent for chalk, ragstone, chert, and firestone; while the local flint gravel was freely used then as now. The Normans introduced the stone from Caen, of which examples may be seen in the Tower, Westminster Abbey, and other buildings. Beer stone from Devon and the somewhat similar Chunch stone, both from the Chalk formation, were much in demand for carving from about the eleventh century; while for columns, beautifully exemplified in the Temple Church, the marble of Purbeck was the favourite material. From the Great Fire of 1666 a new stone era began for London; although many other stones have been and still are employed, Portland stone from that time began to play a dominant part. The majority of London's buildings are now built or faced with limestone, which is readily attacked by the acid-laden town atmosphere, yielding calcium sulphate in the process; this is in itself a cause of further destruction, as the solution soaks into the stone and there crystallises. In the presence of the acid-bearing air the principal cause of unsightly decay is a state of dampness, which may be conditioned by the aspect, the construction, or the design. Continual efforts are being made to discover a preservative that will not impair the appearance of the stone. The least objectionable of these processes, for example, the various silico-fluorides, are liable to prove ineffective after a comparatively short period, and the latest,

Dr. Laurie's silicon-ester, is still on trial. The difficulty with all external applications is imperfect penetration with the consequent danger of skin formation.

THE annual lecture to the Graduate Section of the Institution of Mechanical Engineers was given by Sir John E. Thornycroft on Mar. 28, his subject being "Torpedo Boats and their Machinery." It is more than sixty years ago that Sir John I. Thornycroft began steam-boat building at Chiswick, and it was his work and that of Sir Alfred Yarrow which made the Thames famous as the home of the high-speed vessel. There is no more fascinating story in engineering than the history of torpedo craft, from the early boats of 30 tons to the destroyers of to-day of more than 2000 tons. The latter have boilers and turbines of more than 40,000 H.P. giving a speed of nearly 40 knots. Turbines have been fitted for twenty years, but in the four-cylinder triple expansion engines of earlier destroyers mechanical engineering of the nineteenth century reached its highest pitch of excellence. The speed at which they ran, the lightness of their construction, and the conditions under which they worked, were all remarkable. Sir John in his lecture gave comparative figures which showed that the machinery of a liner in 1855 weighed more than 600 pounds per horse-power, while in a modern destroyer the corresponding figure is 30 pounds. In the coastal motor boats built during the War and fitted with internal combustion engines, the weight was only 12½ pounds per horse-power.

At a meeting of the Newcomen Society on Mar. 30, a paper on "Lead Mining and Smelting in West Yorkshire" was read by Dr. A. Raistrick. In the course of his paper Dr. Raistrick traced the history of lead mining in the Yorkshire dales from Roman times down to the present day, giving notes on the method of quarrying the ore, smelting it, and its sale and transport. Lead pigs are in existence bearing the names of Roman emperors, and there is evidence to show that the industry was carried on continuously, practically down to the present time, though to-day little is being done. The cheaper ores from Spain and elsewhere have been the main cause of the decline, but as foreign mines have to go deeper and instal more machinery, the ore will increase in price and thus the Yorkshire mines may again become profitable. The paper contained much of interest to those who study the history of mining.

PURCHASES during March for the Department of Zoology of the British Museum (Natural History) included a collection of rare land-snails of the genus *Nenia* from Peru, Bolivia, etc., and a remarkably fine golden eagle from Norway. The Trustees also purchased, for the Department of Geology, seven specimens of an ancient roofed-head amphibian, *Protriton*, from a new locality in Thuringia. This little salamander-shaped animal is well preserved in a dark oilshale of Lower Permian age; it is one of the Branchiosauria, which owe their name to the indications of gill-arches in the skeletons of immature individuals. A large collection of skulls and heads of African game animals was presented by Major C. H. B.

Grant. These are particularly valuable since they are accompanied by full details of locality, season, and the like; many of them represent species or races that are now in danger of extermination. Among other donations submitted to the Trustees was a small series of fossil-bearing rocks obtained by the Norwegian expedition of 1921 from the palaeozoic formations of Novaya Zemlya. A nodule containing a V-shaped burrow, probably formed by a kind of lob-worm, was presented by Dr. S. H. Haughton, who obtained it from the Upper Dwyka shales of the Warmbad District, South West Africa; it suggests that these rocks were formed on a tidal flat. Mr. J. R. T. Regan presented some curious branching structures, probably worm-tubes, found by him in the Totternhoe Stone near Dunstable. Other donations included nummulites from north-west India described by Major L. M. Davies, and type-specimens of shells from a fresh-water sandstone of unknown age in the Fiji Islands collected by Dr. Matley.

THE completion of a second submarine cable connecting Canada with Australasia is an event of considerable importance. E. S. Heurtly, in an article in the *Electrician* for April 1, gives many interesting details of the work. It involved the laying of two cables, one between Bamfield, on Vancouver Island, and Fanning Island (3466 sea miles) and between Fanning Island and Suva, Fiji Islands, a distance of 2054 sea miles. The original cable, which was laid in 1902, had a working speed of about 75 letters per minute. By using amplifiers, however, its speed has been increased to about 135 letters per minute. The maximum speed on the new northern cable is at least eight times as great as that of the original cable, and the received voltage at Fanning Island is at least five times as high. The great improvement in the traffic-carrying capacity of the two cables is due to the 'loading' of the cables by alloys of nickel-iron, which have a very high permeability for very low magnetising forces. The 'chrome permalloy' used for loading the southern cable has better electrical characteristics than that used on the New York-Azores cable. The original cable has one advantage over the new cables, as duplex working can be used with it. Owing to the difference in times between Europe and Australasia there is little overlapping of the messages going in opposite directions, and consequently this is not a serious drawback to the new cables. Accurate measurements of the time of propagation of the signals between Bamfield and Fanning Island have been made by means of a siphon recorder used with an amplifier and a tuning-fork. The mean of all the results shows that the signal takes 0.67 of a second to travel 3466 miles. When signalling, therefore, at 1000 letters per minute, more than 40 impulses may be in the cable at the same time.

ONE of the most remarkable of recently constructed tunnels is the Rove tunnel on the new canal between Arles on the Rhone and the port of Marseilles, by the use of which river traffic can avoid the delta or the crossing of the sea between the terminus of the old canal at Port au Bouc and Marseilles. A fully illustrated article on the canal water appears in *La Science*

Moderne for February. The Rove tunnel under the Nerthe hills is nearly four and a half miles long. It has a width of 72 feet, of which 13 feet are utilised by the pathways beside the canal. The depth of water is seven feet and there is room for two streams of canal traffic, with a height above the water line of about 43 feet. Apart from through traffic, this canal promises to be of value in the new scheme, now under way, of making the great Étang de Berre, beyond the northern end of the Rove tunnel, a great port, accessible by large vessels from a wide and deep ship canal at Port au Bouc. Around this extensive harbour is ample room for manufacturing sites. Provided the water power of the Rhone and its tributaries is made available, the port of Marseilles may well become a great centre of manufacturing industry.

THE magazine of the Geographical Association, on reaching its fourteenth volume, has been named *Geography* in place of the original title *The Geographical Teacher*. The change in name involves no change in policy or scope. It is still to be published three times a year and to be devoted to the interests of teachers, but its general appearance and production have been much improved. In addition to the usual short articles, notes for teachers, and reviews of geographical books, the spring number contains Sir Charles Close's presidential address on "Population and Emigration," in which he makes a statistical study of Empire settlement. In the belief that the Dominions can absorb annually about five per thousand of their total population, he estimates that Great Britain could send overseas about 100,000 emigrants a year apart from the number that go outside the Empire. He gives a total of about 168,000 as the reasonable annual emigration.

No. 4 of the *Quarterly Review of Biology* completes volume 1, and the editors, Profs. Raymond Pearl and R. W. Hegner, are to be congratulated on the success of their initial volume. The trustworthy and readable articles on subjects of current interest and importance in various fields of biology, and the helpful notices of new biological books, have established the reputation of this new *Review* and have made it what its editors intended it to be—useful to the professional biologist, to the worker in other sciences who wishes to maintain his general interest in biological progress, and to the intelligent lay reader. The principal article in this issue (No. 4) is a comparative account by Dr. Adolph H. Schultz of the foetal growth of man and other primates, which is excellently illustrated by drawings, diagrams, graphs, and tables. The London agents for the journal are Messrs. Bailliere, Tindall and Cox, 7 and 8 Henrietta Street, Covent Garden, London, W.C.2.

DR. P. CHALMERS MITCHELL will deliver the annual Huxley Memorial Lecture at the Imperial College of Science and Technology, South Kensington, on May 4, taking as his subject "Logic and Law in Biology."

SIR JAMES BERRY, president of the Royal Society of Medicine and author of standard works on surgical subjects; Sir H. Walford Davies, professor of music, University College of Wales, Aberystwyth; and Sir Frederick Keeble, formerly Sherardian professor of

botany, University of Oxford, and distinguished by his work in pure and applied botany, have been elected members of the Athenæum Club under Rule II., which provides for election by the Committee of "persons of distinguished eminence in science, literature, or the arts, or for public services."

THE annual dinner of the British Science Guild will be held at the Criterion Restaurant, London, on Thursday, May 12. Lord Askwith will preside, and the guests include Sir Alfred Mond, Sir Herbert Samuel, the Hon. W. Ormsby-Gore, Sir William Pope, and Sir Frederick Keeble. Particulars may be obtained from the Secretary, British Science Guild, 6 John Street, Adelphi, W.C.2.

At the annual general meeting of the Ray Society held on Mar. 24, the following officers were re-elected: *President*, Prof. W. C. McIntosh; *Treasurer*, Sir Sidney F. Harmer; *Secretary*, Dr. W. T. Calman. Dr. G. P. Bidder was elected a vice-president, and Mr. J. Spedan Lewis and Mr. F. Martin Duncan were elected new members of council. It was announced that the Society's issue for 1927 would be the first volume of a "Monograph of British Sea Anemones," by Dr. T. A. Stephenson, which will be illustrated with coloured plates from the author's drawings of the living animals. It is expected that this work will prove unusually attractive as well as of great scientific interest.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—An assistant master for mathematics at the Government High School, Nassau, Bahamas—The Board of Education (C. A. (T.)), Whitehall, S.W.1, or The Scottish Education Department (T.), Whitehall, London, S.W.1 (April 11). An assistant pathologist at the Charing Cross Hospital Institute of Pathology—The Secretary of the Institute, 62 Chandos Street, W.C.2 (April 25). Junior assistants in the aerodynamics department of the National Physical Laboratory—The Director, National Physical Laboratory, Teddington (April 30). A lecturer in geography at Armstrong College—The Registrar, Armstrong College, Newcastle-upon-Tyne (May 7). A professor of agriculture at Armstrong College—The Registrar, Armstrong College, Newcastle-upon-Tyne (May 20). An assistant in the Dominion Museum, Wellington, New Zealand—The High Commissioner for New Zealand, 415 Strand, W.C.2 (May 31). An assistant in the Laboratory of Zoophysiology of the University of Copenhagen, mainly for research work in respiratory metabolism and gas analysis—Prof. A. Krogh, The University, Copenhagen. A teacher of design, with special reference to the textile industry, at the Leicester College of Arts and Crafts—The Registrar. A senior biology mistress at the Cheltenham Ladies' College—The Principal.

Our Astronomical Column.

THE BIELID METEOR SHOWERS.—Mr. Willard J. Fisher, of Harvard Observatory, contributes a paper to *Proc. Nat. Acad. Sciences*, Dec. 1926, in which he collects a large amount of material relating to various apparitions of these showers, and plots them in the endeavour to trace the laws of their recurrence. In 1741 and 1798 the shower occurred on Dec. 6 and 7; there were also December showers in 1830, 1838, and 1847, but all since then have been in November, owing to the motion of the node. On plotting the showers they appear to group themselves along four different lines, indicating presumably that there are several condensations of meteors along the orbit, their periods being slightly different. Many of the brighter showers are separated by intervals of 13.0 years (double the period of the comet). It is noteworthy that three of the four lines in the diagram converge towards a point a few years ahead of the present time, when the date of the shower will be Nov. 16. It will be well, therefore, to keep a careful watch for these meteors in coming years.

COMET GRIGG-SKJELLERUP.—It is curious how this comet has consistently been associated with the British Astronomical Association. It was found both in 1902 and 1922 by members of the Association, Mr. J. Grigg of Thames, New Zealand, and Mr. Skjellerup of Cape Town. The suggestion of identity was first made by Mr. R. T. Crawford and Mr. W. F. Meyer of California, but it was Mr. G. Merton, another member of the Association, who finally proved it, and made a prediction for the return of the present year.

Mr. F. J. Hargreaves, the director of the photographic section of the Association, was the first to photograph the comet at the present return, on two successive evenings, Mar. 27 and 28. It was Mr.

Merton who detected the very faint images of the comet, Mr. Hargreaves having overlooked them. Further confirmation was obtained by a photograph taken by Prof. Schorr at Bergedorf on Mar. 31. Mr. Hargreaves uses an aero-lens of 20 inches focus, the mounting being home-made. It is a great encouragement for amateurs that this tiny equipment beat the instruments at the Yerkes and Harvard Observatories, which reported in the same week that they could obtain no trace of the comet. The explanation is that such large, faint, diffused objects are specially adapted to small-scale photographs using a large light-ratio. The deduced date of perihelion is May 10.245, 1927, U.T., which is only one-tenth of a day earlier than Mr. Merton's predicted date, May 10.34. This date had been communicated to Mr. F. E. Seagrave, who published ephemerides based upon it, but without mentioning Mr. Merton's name.

The corrected elements are as follows:

T 1927 May 10.245 U.T.
 ω 355° 1' 48" } 1927-0
 Ω 215 32 1
 i 17 29 18
 ϕ 43 48 58
 log q 9.95068

Period 4.98772 years.

Ephemeris for 0^h U.T.:

	R.A.	Decl.	[log r .	log Δ .
Apr. 6.	5 ^h 58.6 ^m	1° 25' S.	0.0123	9.7642
14.	6 11.8	1 17 N.	9.9896	9.7213
22.	6 27.3	4 43	9.9707	9.6676
26.	6 36.1	6 49 N.	9.9633	9.6363

The comet will approach within 19 million miles of the earth early in June. It will probably be a difficult object to observe accurately, being large and diffused.