Although these remarkable mice are commonly called either Japanese or Chinese, it appears that their real home is China, since they are known in Japan as Nanking mice. In Japan, where there were originally a grey and a white breed, these mice are kept in cages on account of their well-known dancing propensities. After an exhaustive examination of their internal auditory organs, the author comes to the conclusion that the dancing of these mice is not due, as commonly supposed, to disease of the labyrinth, but to the effect of confinement for untold centuries in small cages.

THE German scientific periodical *Die Natur* has been discontinued as a separate publication, and is now combined with the *Naturwissenschaftliche Wochenschrift*, edited by Prof. H. Potonié and Dr. F. Koerber and published by Gustav Fischer, Jena.

MR. F. HOWARD COLLINS has compiled from Admiralty sources a collection of tables showing "the magnetic direction and neap and spring rates for every hour of the tidal streams at forty-eight localities alphabetically arranged between the Nore and Scilly Isles." The latitude, longitude and characteristics of each light are stated, and under them are given particulars as to directions and rates of neap and spring tides. The tables are published by Mr. J. D. Potter at two shillings.

THE simple experiments in "Mensuration, Hydrostatics and Heat" given by Mr. G. H. Wyatt in the little book published under that title as one of Messrs. Rivingtons' Handbooks of Practical Science, should be familiar to every schoolboy. The book has now reached a third edition, and contains a course of practical work which can be done with profit by boys in the lower forms of schools. Not only do exercises of this kind develop delicacy of manipulation and minute attention to details in the pupils, but they are also of decided value in connection with other branches of school work.

THE additions to the Zoological Society's Gardens during the past week include a Chimpanzee (*Anthropopithecus troglodytes*) from the Gold Coast, presented by Captain Daniel A. Donovan; an Illiger's Macaw (*Ara maracana*) from Brazil, presented by the Countess of Malmesbury; a Common Kingfisher (*Alcedo ispida*) British, presented by Mr. J. F. Smith; a Hocheur Monkey (*Cercopithecus nictitans*) from West Africa, deposited; three White-throated Capuchins (*Cebus hypoleucus*) from Central America, a Humboldt's Lagothrix (*Lagothrix humboldti*) from the Upper Amazons, purchased; a Burrhel Wild Sheep (*Ovis burrhel*), a Japanese Deer (*Cervus sika*) born in the Gardens.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN JUNE:—

June 2. 15h. 1m. to 15h. 54m. Moon occults 54 Ceti (mag. 5·8).
2. 19h. 0m. Venus in conjunction with moon. Venus 2° 44′ S.
5. 11h. 58m. to 15h. 40m. Transit of Jupiter's Sat. III.
9. Saturn. Outer minor axis of outer ring = 15″·41.
10. 16h. 0m. Uranus in opposition to the sun.
12. 15h. 37m. to 19h. 20m. Transit of Jupiter's Sat. III.
14. 23h. 36m. Moon in conjunction with α Virginis (mag. 1·2).
15. 10h. 15m. to 11h. 31m. Moon occults 86 Virginis (mag. 6·0).
15. Venus. Illuminated portion of disc = 0·711. Mars = 0·989.
18. 9h. 37m. to 10h. 59m. Moon occults ν Scorpii (mag. 4·5).
22. 23h. Saturn in conjunction with moon. Saturn 5° 11′ S.
June 24. Vesta situated 21′ south of Saturn.
24. 17h. Jupiter in conjunction with moon. Jupiter 5° 54′ S.
26. 12h. 25m. Minimum of Algol (β Persei).
29. 9h. 14m. Minimum of Algol (β Persei).

NEW ALGOL VARIABLE.—*Circular* No. 65 from the Harvard College Observatory announces the detection of a new variable on the photographs obtained there. An examination of a plate taken on April 3, 1902, for the possible presence of comet *a* 1902 showed that as compared with a plate of the same region obtained on March 7, 1900, the star + 43°·4101 was abnormally bright. This star is a double, and it is the north preceding component which shows the variability. The position is

$$\left.\begin{array}{l}\text{R.A.} = 21\text{h. } 55\text{m.}\cdot 2\\ \text{Decl.} = +43^{\circ}\ 52'\end{array}\right\}(1900).$$

More detailed examination showed that the star was generally bright and constant in light, so that it must be of the Algol type. It is not very distant from the remarkable variable SS Cygni, which precedes it 16m. and is 44′ south.

The variable is shown at full brightness (about 8·9 magnitude) on 388 plates taken between 1889 and 1902, and on 19 it is shown as fainter than 9·3 mag. The period appears to be about 31·304 days. On plotting the light curve from the data obtained it appears that the star retains its full brightness for 28 days. About one day before the minimum it commences to diminish, attaining the magnitude 11·5 at 0d.·43 before minimum. The light then remains constant for more than half a day, with the minimum magnitude 11·6. The time of increase is more uncertain, but apparently is nearly the same as that of decrease. The times of the last minimum, with predicted future ones, are as below:—

	Minima. h.	m.	
1902 April 28	21	33	G.M.T.
May 30	4	51	
June 30	12	8	
July 31	19	26	
Sept. 1	2	44	
Oct. 2	10	2	

COAST FOG SIGNALS.

WHEN lighthouse lights and all other seamarks are obscured by fog, sound is the only medium by which warning signals can be conveyed to mariners. It has been thought that it might be possible to transmit such signals by means of etheric vibrations; but assuming such intercommunication were established, it would fail in two most essential requirements for assisting the mariner in foggy weather, as it would not give him any information as to the direction from which the warning message came, nor would it tell him how far distant the signalling station was. Further developments may in the course of time remedy these defects, but from present-day knowledge and experience it cannot be said that etheric vibrations are available for fog-signal purposes at sea. In a paper recently read before the Society of Arts, Mr. E. Price Edwards discusses the present position of this question of sound signals and gives some interesting particulars of the trials carried out at St. Catherine's Point, in the Isle of Wight, last summer. From this it appears that for many years past sound-producing instruments of various kinds have been employed for uttering warning sounds at points of danger on our coasts, and that constant efforts have been made to develop instruments yielding sounds of great loudness and penetrating power, so as to overcome the numerous obstructive influences affecting the propagation of sound through the atmosphere. The instrument which has proved most effectual for this purpose is the siren, sounded by means of air forced through it at a pressure of about 40 lb. on the square inch. It is used in the form of a double cylinder, one cylinder fixed, the other (inside it) rotating, each cylinder having longitudinal slits corresponding in number and area, through which, as often as they coincide, the air passes. In the trials at St. Catherine's, two flat circular discs with radial slits were tried, with very satisfactory results; but this arrangement involves a separate motor to rotate the movable disc, whereas the rotation of the cylinder siren is effected by the air pressure which produces the sound. It is considered that some loss of power and a more or less defective blast result from the self-driving arrangement, and that the use of a separate motor will remedy these defects. The trials referred to were made with various forms and sizes of siren and several instruments sounded on the reed principle, the result being that the reed instruments proved greatly inferior to the siren instruments in loudness and penetrating power. It is contended by some that the reed principle as applied for the production of loud sounds has never yet been done justice to, and that with proper development a reed instrument could be made to yield sounds as powerful and penetrating as those of the siren; but, as Mr. Price Edwards points out, the reed instruments tried, and which were supposed to be the most effective types of that form of sound producer in existence, were not able to approach the sirens as regards efficiency for coast fog-signal purposes. If a reed instrument could be brought up to an equality with a siren in respect of sound power, it would probably be more economical than a siren in working. The question of trumpets received some special consideration at St. Catherine's, a new form of trumpet designed by Lord Rayleigh having been experimentally tried there. Lord Rayleigh had observed that with the conical trumpets of circular section usually employed there was a liability to some interference of the sound waves issuing from the mouth, caused by the difference in distance of the nearest and furthest parts of the mouth, whereby the waves were likely to get out of step and thus cause interference. He also pointed out that a good deal of sound was sent to the zenith from the mouth of circular section, which sound was certainly wasted. To remedy these defects, Lord Rayleigh's idea is to make the horizontal diameter at the mouth only half the length of the sound wave generated by the sounding instrument, and that the vertical diameter should be elongated to two wave-lengths or more, thus producing a mouth of elliptical section. The tendency for the waves issuing from the mouth to get out of step would thus be reduced to a minimum, and the narrowness of the mouth at top and bottom would offer but little scope for the sound to be projected upward or immediately downward. So far as the trials went, Mr. Price Edwards tells us that the effects produced were most encouraging, and it is now intended to set up this elliptical trumpet for practical trial at a fog-signal station. The mushroom form of trumpet for an all-round signal has been largely used for lightships. Instead of a long horizontal trumpet, or a vertical one with the head bent over (capable of being turned in any direction), the trumpet is fixed vertically with its mouth directed upward. Just above and in the centre of this open mouth is fixed an inverted cone, and the sound issuing from the trumpet strikes the curved sides of the cone and is reflected out with equal force all round the horizon. The trials made with this form of trumpet showed that it was well adapted for the purpose for which it had been designed.

But however powerful and characteristic the sound-producing instruments may be, the conditions of the atmosphere have very much to do with their effectiveness. An opposing wind, as is well known, shortens the range of penetration of the most powerful sound. An instance is given by Mr. Price Edwards when the sound of a siren was on one day heard for a distance of more than twenty miles, while on another day, with a little opposing wind and a noisy sea, the sound of the same instrument was not heard beyond a distance of one mile and a quarter. Fortunately, when sound signals are most needed, viz. in foggy weather, obstructive influences seldom occur; the air is generally still, the sea quiet, and a homogeneous condition as regards temperature and moisture exists, all of which conditions are favourable for the propagation of sound. It does not seem at all probable that the acoustic clouds of Prof. Tyndall are formed when fog prevails; indeed, they appear to want hot sun, causing evaporation from the sea surface, which produces areas of varying temperature and density. Two remarkable phenomena have been experienced in connection with the experiments at St. Catherine's for which no satisfactory explanation is yet forthcoming. In the one case it was found that at times there was a sort of hiatus in the passage of the sounds. Thus the observers on board the Trinity yacht *Irene* would be in full hearing of the sounds at a mile distance from the instruments. On proceeding out, the sounds would very soon fall away in strength until at a distance of between two and three miles they would be very faintly heard or lost altogether. Proceeding further out on the same line of bearing, the sounds would be gradually recovered, until a little beyond three miles they would again come into full hearing and be carried as loud and distinct sounds for a considerable distance. The question is, what becomes of the lost sound, and what is the influence which renders the area in question "a silent area"? The phenomenon apparently does not occur frequently, for very many times the observers went over the same space without experiencing any such hiatus of sound. Mr. Price Edwards suggests that to solve the question prolonged and continuous observation would be necessary in all parts of the sea area over which the sounds are projected—at the sea surface, on the deck of a vessel, and at varying distances upward by means of a captive balloon. It is of importance to determine, if possible, the cause of this intermission of audibility, in order that it may be prevented or guarded against when the sounds are being promulgated as official warnings to mariners.

The other noteworthy phenomenon which occurred at St. Catherine's and on previous occasions when sound signals have been tested by observation at sea were the aërial echoes. With a smooth sea and still atmosphere, the direct sounds from the sirens were immediately reinforced by powerful echoes from the sea. Mr. Price Edwards describes them as starting from a point on the horizon corresponding to the prolongation of the axis of the trumpet from which the sound proceeded, and with great rapidity spreading out over the sea expanse as though a scattered army of trumpeters in quick succession sounded their blasts from all parts of the horizon. Carefully timed, the echoes lasted at times for 30 seconds, or ten times as long as the original blast. Prof. Tyndall suggested that "the duration of the echo is a measure of the atmospheric depth from which it comes." If this be so, the length and strength of the echoes might afford a general indication of the relative penetrating power of the sounds of different instruments. With a disturbed atmosphere and an agitated sea surface, the echoes were very short or not heard at all. It is noteworthy that both the silent area and the aërial echoes occur chiefly in quiet weather, and that disturbance of air or sea appears to be antagonistic to their manifestation.

An important conclusion appears to have been arrived at in regard to the most suitable note pitch for the blasts of sirens or reed horns. In fog—as has been stated—the meteorological conditions are usually equable, and when such is the case a low-pitched note is found to be more effective than a high-pitched one; on the other hand, when air or sea is disturbed, the higher pitched notes seem to be rather less obstructed by the opposing influences, although the advantage is not very great. Having regard to the fact that the sounds are only required for use in foggy weather, a low-pitched note of about 98 vibrations per second (which is that which was heard plainly more than twenty miles away) is perhaps the best for the blasts of a siren fog signal. In this connection it should be mentioned that in order to obtain the best effect from an instrument it is essential that the note given by the sound producer should, if possible, be in unison with the proper note of the associated trumpet, otherwise the issuing sound is apt to be gruff and discordant.

SEA TEMPERATURE AND SHORE CLIMATE.

IN Mr. W. N. Shaw's paper "On the Seasonal Variation of Atmospheric Temperature in the British Isles" (*Proc.* Roy. Soc., vol. lxix., pp. 61-85), it is stated that it seems "probable that the ocean plays a paramount part in the causation of the second-order temperature effect which we experience in these islands. . . . Whether this variation of the temperature of the water which surrounds these islands is the cause of the atmospheric second-order variation, or whether it is only another effect of the same fundamental cause, does not appear, but in view of the fact that the marked second-order effect is not seen at Continental stations, it would seem not unlikely that the ocean temperature is the immediate cause of our second-order periodic temperature variation. . . . All the successive stages of temperature change are delayed by the effect of the sea. . . . The effect of the sea is to delay the seasons." Of course, it is a very old belief that the vicinity of the sea affects the temperature of a climate, moderating the heat of summer and the cold of winter, but the ideas on the subject have been of the usual vague popular character. What is curious is that it has taken so long to initiate some investigation designed to discover what may be the nature of the relationship between the temperature of the sea and that of the air over the adjacent land. Although the North Atlantic is the most frequented of the great oceans,