

has been allowed to evaporate, as tested by the smell. The solution is also carefully filtered before use, and diluted to a small extent. After from three to ten minutes or more in the carmine solution, the section is placed in distilled water and thoroughly washed for some time by blowing into the water with a small pipette. From this the section is removed momentarily to a watchglass containing distilled water and two drops of acetic acid, and then is placed in absolute alcohol. The water is thus removed, and in five or ten minutes the section may be placed in oil of cloves, which renders it very transparent. From this it is removed to the glass slip, and is mounted in a solution of gum damara in turpentine, such as is sold by artist's colourmen. At any stage in this process we can proceed back again by the same steps, ammonia being used in place of acetic acid, and re-stain, re-wash, or re-acidify as the case may be. If the staining is carefully managed and the subsequent washing a thorough one, most cellular structures are very beautifully and clearly brought out. Where rapidity is desired, and for the purpose of inspecting a specimen, it may be simply mounted in glycerine after the staining. The process above described is that of Gerlach and Stieda, and is preferred to any other by some observers of great experience. Thus Dr. Meynert, of the lunatic asylum at Vienna, who is throughout Germany regarded as the great authority on the histology of the brain, uses this method for mounting his sections of cerebrum, cerebellum, &c. It is very convenient to have little glass dishes with covers for each of the above-mentioned re-agents, so that the sections may be passed from one to the other and left covered up, if desired, for a day or two—the waste of re-agents involved in filling watch-glasses each time they are required being also avoided. If preparations have been preserved in chromic acid, they must be very well washed before staining, and very often cannot be made to stain well at all. Various methods are useful in various cases, but, as one of great general use, the carmine staining and oil of cloves clearing may be strongly recommended. Staining tissues with nitrate of silver, chloride of gold, and with bile-pigment are most important aids to the histologist, the merits of which have been recently much discussed, and of which we shall have a word to say from experience.

Glycerine Jelly.—This composition, which has been lately introduced, melts at a lower temperature than Deane's medium, and has a greater clearing action on the objects mounted in it. A small piece of the jelly put on a glass slip and warmed, soon liquefies, and is ready to receive any object, after which the cover is directly applied. For objects which do not require any great amount of "clearing," it is a most useful medium. Insects, worms, small crustacea, &c., may be mounted in this way excellently.
E. RAY LANKESTER

METEOROLOGY OF JUNE 1870

I BEG to send you a few particulars of the weather of the past month (which was characterised by unusual atmospheric phenomena), deduced from daily observations with standard instruments, the place of observation being in latitude 51° 27' N., longitude 0° 18' W., height above sea level 64 feet.

The barometrical readings have been corrected for capillarity, index error determined by comparison at the Royal Observatory, Greenwich, and certified by James Glaisher, Esq., F.R.S., and reduced to 32° Fahr. and mean sea level.

The thermometrical readings have been corrected for index error determined by comparison at the Kew Observatory of the British Association.

Time of observation, thermometer 7^h 45^m A.M., barometer 8^h 0^m A.M., wind direction 8^h 30^m A.M., daily (approximate).

The following are the calculated monthly means, &c.

Mean height of the barometer (corrected)	. . . . .	30°135 in.
Highest observed reading	. . . . .	30°551 in.
Lowest observed reading	. . . . .	29°747 in.
Monthly range	. . . . .	0°804 in.
Mean temp. air (7 ^h 45 ^m A.M.)	. . . . .	60°8°
" " of evaporation	. . . . .	55°3°
" " of dew point	. . . . .	50°6°
Relative humidity (dry air=0, saturation=100)		70
Mean of the maxima	. . . . .	75°1°
Mean of the minima	. . . . .	51°2°
Mean diurnal range of temperature	. . . . .	23°9°

Extremes	{ Highest reading (June 22)	. . . . .	91°4°
	{ Lowest reading (June 6)	. . . . .	41°6°
Monthly range of temperature	. . . . .		49°8°
Mean estimated force of wind (0 to 6)	. . . . .		1°5
Total rainfall	. . . . .		0°597 in.
Days on which rain fell	. . . . .		5
Evaporation on 22 days	. . . . .		3°652 in.
Mean intensity of ozone (24h)	. . . . .		2°5
*** Sun at greatest meridional altitude (year) or greatest N.D. June 21st.			

A lunar halo (or portion of a circle) was observed on June 9 shortly after 10^h P.M. (or 10^h astronomical time). Its estimated extent was 270° of a circle whose diameter was 60°. Estimated altitude of the moon at time of observation, 35°.

A thunderstorm occurred on the 16th, with very vivid lightning, yielding 0°355 inch of rain, which was equivalent to 7987½ gallons, 1288°65 cubic feet, or 35°9 tons per acre, assuming the rainfall to be equally distributed, which may be done with some degree of truth, as the amount measured at the Kew Observatory, one mile distant, agrees with mine to the second decimal.

The atmosphere was moderately charged with moisture during the month, which must have been an assistance to vegetation in spite of the excessive drought.

The rainfall during this month was 0°558 inch less than that registered during the corresponding period last year.

Wind directions in the lower regions of the atmosphere were observed on 12 out of 16 points, the prevailing directions being between W. and S.W. points.

Richmond, Surrey, July 7

JOHN J. HALL

THE ROTUNDITY OF THE EARTH

"PARALLAX" is not dead yet. His backer, Mr. John Hampden, has again brought his sophisms and his misstatements before the public in the form of a periodical called the *Armourer*, which has already had one period of existence, having been discontinued about four years since, "amidst the regrets of hundreds of its readers," as the editor asserts. When Mr. Hampden speaks of the recent experiment by which the falsity of "Parallax's" views was exposed, as "the Bedford Canal swindle," of Mr. Wallace's victory as having been obtained by "Scotch knavery and cunning," and of the conduct of the editor of the *Field* as umpire as having been "false, unfair, and fraudulent" we may well leave these charges to be replied to by these gentlemen themselves, or by the law. As, however, "Parallax" repeats unblushingly his assertion that he has for years propounded his views by lectures in various parts of the country without their having been once refuted, we may call to his remembrance a circumstance which he has probably found it convenient to forget. During the recent experiments at the Bedford Level, "Parallax" carefully concealed the fact that the very same test had been previously applied. In the year 1856, however, after a lecture by "Parallax," at Norwich, two gentlemen challenged him to an experimental proof of his views. He accepted the challenge and was invited to witness the experiment, which invitation, however, he did not respond to, but prudently left the town in the interim. The nature and result of the experiment are detailed in a printed slip which was inserted at the time in the local papers, and a copy of which we append:—

COPY OF AGREEMENT.—We, the undersigned, "Parallax," of No. 61, Upper North Place, Gray's Inn Road, London, on the one side, and John Weir, of No. 14, Suffolk Street, Union Place, Norwich, and Charles William Millard, of Prince's Street, Norwich, on the other side, having different opinions as to whether the Earth be a Plane or a Globe, agree to test the accuracy of our respective opinions in the following manner, that is to say, to place four flags in a straight line, intersecting the River Yare between Strumpshaw or Bradestone and Norton, for a space of not less than four miles, or six miles if possible. The flags to be at the same height above the water except the

last or fourth flag, which is to be placed close behind the third flag, at a height of three feet above it; if we can see the fourth or furthest flag above the tops of the other three flags, the Earth is a plane, or if the second flag from the telescope be above a line joining the tops of the first and third flags, the Earth is a globe.—(Signed)—“PARALLAX;”—JOHN WEIR, C. W. MILLARD, Engineers and Surveyors.

Dated November 24, 1856

Witness—R. F. HINDE

COPY OF CERTIFICATE.—We, the undersigned, hereby certify and declare, that on the eleventh day of December, one thousand eight hundred and fifty-six, we accompanied Messrs. Weir and Millard, and assisted in placing the flags in the manner above mentioned, and that upon looking at the flags with a powerful telescope, the top of the second flag was fifteen inches and one half of an inch above a line joining the tops of the first and fourth flags, and twenty-four inches and one quarter of an inch above a line joining the tops of the first and third flags, thereby proving that the earth is a globe, and that from the results of this experiment, “Parallax” is found, by the before-mentioned agreement, to renounce, for ever, his theory of the earth being a plane.—(Signed)—R. F. HINDE, Sussex-street, Norwich, manufacturer; ALEX. SANDERSON, Magdalen-street, Fye-bridge, tobacconist; W. H. DAKIN, Davey-place, Norwich; JAMES NEWBEGIN, St. Andrew’s, tobacco manufacturer.

Will nothing stop “Parallax’s” mouth?

TEA

THE word “Tea” is applied to the leaves of numerous plants from which infusions are made in their several native countries. Thus in Paraguay they use a species of Holly, in Abyssinia and Arabia the leaves of *Catha edulis*, and in Labrador those of *Ledum latifolium*.

We propose, however, in this paper, to say a few words about that article which is generally and popularly known as tea, and which forms such an important commercial commodity between China, India, and our own country. How long tea had been used in China before its introduction into Europe early in the seventeenth century no one can venture to say, but it appears to have been first known in England about the year 1660, and no article of commerce, perhaps, presents a parallel history of such rapid development. In 1678 the East India Company imported into England 4,713 lb. Tea, however, continued to be a rarity for many years after that date, fetching a high price, and consequently remaining beyond the reach of all but the more wealthy. The demand for it increased so rapidly that in 1725 the consumption in the United Kingdom reached 370,323 lb. Since then tea has been more and more in demand, until we find the returns for last year show as much as 139,223,298 lb. imported, and 111,889,113 lb. entered for home consumption, the computed real value of the tea imported during eleven months of 1869 being 9,115,823 l.

The plant from which this large source of wealth is obtained is a shrub, the native country of which is still not definitely known. Although it has been cultivated for many hundreds of years in China, and its use alluded to in ancient Chinese legends, it has not been discovered in that country in a wild state, but truly native tea occurs in the jungles of North-eastern India.

At one time botanists were inclined to the opinion that black and green teas were furnished by two distinct species, the former by *Thea bohea* and the latter by *T. viridis*. So little difference exists between them that there seems no doubt as to their being mere varieties, and both are now usually referred to one species, the *Thea chinensis* of Linnæus. Though tea is now largely grown in Assam and some also in Japan, the plants cultivated in both countries are varieties introduced from China. The black and green teas of commerce may be prepared from either form of the plant according to the pleasure of the tea farmer, the colour in a great measure depending upon the

rapidity of the artificial drying of the leaf, and also upon the length of time the freshly gathered leaves are exposed to the air before heating. There are, however, districts in China called respectively the Black and Green tea districts, in which the plants are grown specially for each purpose. For the preparation of either sort the leaves are gathered by hand, and the younger ones should alone be taken. If they are intended for the manufacture of black tea they are exposed to the air for a short time, after which they are placed in iron pans and submitted to a gentle heat for a few minutes. By this process much moisture is thrown off, and the leaves are rendered pliable, so that they are easily pressed or rolled between the hands, by which the characteristic twist or curl is given to them. Before, however, they are fit for market, they are exposed to the air for two or three days, and finally dried in iron pans over a slow fire. The chief difference in the preparation of genuine green tea is, that it has to be more quickly dried after undergoing the curling or twisting process in the hands, black tea being allowed to remain in heaps in a flaccid state, before the final drying or roasting, which, in itself, is much slower. A great deal, however, of the green tea consumed in this country, is artificially coloured by the Chinese, chiefly with Prussian blue, gypsum, and turmeric. Of course it is only inferior teas that are so treated, a good face being thus given to them. They can mostly be detected by placing a handful of the tea on a sheet of white paper; a thick, greenish dust will not only be left on the paper, but will rise every time the tea is shaken. By breaking a few leaves also with the finger nails this coloured tea will show a brownish fracture, while genuine uncoloured tea is more or less green throughout, and consequently little or no dust is deposited from it. As the leaves of true tea vary very much in size and form, adulteration with the leaves of some other plants is not so easily detected. The nearest approach, however, to the form of the true tea leaves are those of *Camellia sasangua*. This plant itself is a near botanical ally to the tea, and the leaves are moreover used by the Chinese for scenting many of their teas. Most other leaves which have been found as adulterants may be detected by their forms.

We give a figure of a leaf of true tea.

If a leaf of black tea be soaked in cold water, spread out, and inspected through a microscope of ordinary power, it will present the appearance shown in the cut, the older and larger leaves will be of a dullish green, and the younger ones of a light semi-transparent green. It will not serve us to examine the internal structure of the leaf, as it has many points in common with other leaves, and would moreover require minute examination. The best black tea, then, should present the appearances above indicated, and the same may be said of green tea, with this exception, that after being soaked it is of a paler green colour than the former.

Amongst the commercial varieties of tea the following are the best known:—Congou: this constitutes the bulk of black tea from China. It is that which is usually sold as black tea, and of course varies much in price according to its purity; a really good tea of this description ought to be had at the present time at 2s. 6d. per lb.

Souchong and Pekoe are both finer kinds of black, and fetch higher prices. Another kind of black called Orange Pekoe may be known by its long, wiry leaves, which are mostly genuine; it is artificially scented, and is generally used by grocers for mixing with inferior kinds. A fine Pekoe, however, ought to be obtained for about 4s. per lb.

Caper is a common black tea, artificially scented; the leaf as we see it in commerce has the form of the Gunpowder leaf, but these are made up of tea-dust and other matters agglutinated.

Amongst green teas, genuine Gunpowder is the finest; the qualities and prices however vary very much; the leaves of the best are in fine, close curls, and are the