probably in Thunberg's Herbarium alone, has been found abundantly on the Bothasberg within five miles of Grahamstown.

The following note to the above paper has been furnished by Professor Oliver.

[For the convenience of those who have interleaved copies of the 'Flora Capensis' it may be mentioned that at least two other new species of *Senecio* have been issued by Mr. Mac Owan since the publication of the third volume of that work, viz.:—*S. tropæolifolius*, Mac Ow., described and figured in Hooker's 'Icones Plantarum,' t. 1011, a species allied to *S. oxyriæfolius*, DC., from which it differs in its radiate capitula; and *S. cornu-cervi*, Mac Ow. They may be diagnosed as follows:—

S. TROPÆOLIFOLIUS, *Mac Ow.* Herba glaberrima, glaucescens, caule gracili basi fruticuloso; foliis carnosulis peltatis gracile petiolatis, late ovato-orbicularibus acute sinuato-angulatis; scapo stricto erecto gracili, 1-2-cephalo, bracteis minutis linearibus arcuatis instructo; involucri campanulato calyculato, squamis 10-12 anguste linearibus acuminate marginibus tenuiter membranaceis; radii floribus ad 8, disci 10-20; achenio striato glaberrimo.

Hab. Near Grahamstown, Cape of Good Hope.

Leaves 1 in. diam., scape 8-10 in. tall. Scales of involucre $\frac{1}{4}$ in. long, equalling the disk.

(Of the following species, a description has been published by the Albany Natural History Society, 1867.)

S. CORNU-CERVI, *Mac Ow.* (§ Rigid). Caule a basi ramoso tomentoso ramis corymbiferis; foliis oblique profundeque sinuato-pinnatisectis margine revolutis basi subauriculatis supra araneosis subtus albo-tomentosis; corymbo composito, ramis primordialibus laxis elongatis ultimis brevissimis inæqualibus, involucri glabro polyphyllo squamulis 12 araneosis suffulto; floribus disci 40-50, radiis 12 angustis; acheniis striatulis pubescentibus.

Hab. Katberg Mountains, Cape of Good Hope.

Allied to *S. juniperinus*, L.]

On the Silkworm-Oaks of Northern China. By HENRY F. HANCE, Ph.D. &c., H.B.M. Vice-Consul, Whampoa, China. Communicated by J. D. HOOKER, M.D., V.P.L.S.

[Read May 7, 1868.]

THE Commercial Report for the year 1865, by Mr. Thomas Taylor Meadows, on the Consular District of Newchwang, the most northerly of the ports of China opened to foreign trade by the

Treaty of Tien-tsing, and situated in the Manchurian province of Tung-t'ien or Shêng-king *, contains some interesting details, derived from personal investigation, regarding "mountain silk," the product of the larvæ of a moth feeding on oak-leaves, and which has of late attracted some attention in Europe †. Blue-books are so seldom a favourite class of literature with students of natural science, that it is unlikely many who hear this paper will have met with the able Report above referred to ‡, from which, therefore, I think it may be worth while to make the following extracts:—

"There are two crops of the mountain cocoon, a 'chun' or spring crop, and a 'tsew' or autumn crop. The latter is collected in the last half of September and in October, and the cocoons are brought to market during this latter month. At this period the silk-growers pick out the best of the cocoons for the production in spring of the butterfly and worm for the spring crop. They are preserved in baskets, which are hung up in the Chinese dwelling-rooms. These almost always face the south, thus opposing a blank back wall to the cold northerly winds prevalent in winter, and getting from their southerly windows the full advantage of the sun in that season, when, during nine days out of ten, there is a clear blue sky. Besides this, the dwelling-rooms are partially heated by the warmth emanating from the surface of the kang, a brick bench which occupies about one-third of the room, which serves as a sleeping-place at night, as seat, &c., during the day, and inside which is a winding flue, with an aperture at one end, in which a fire of millet-stalks is occa-

* In the map of the Russian Empire which accompanies Ledebour's 'Flora Rossica,' Schinking is given as a synonym of Manchuria, and embraces the territories known to geographers as Kirin and Tsitsihar, with the part of Inner Mongolia situated to the east of the Soyotsi mountains.

† Mr. W. H. Lay, in his Report on the trade of Chefoo for the year 1865, thus refers to what, I suppose, is the same production. "Amongst the articles that can be exported from Chefoo, there is brown silk produced from the wild silkworms that swarm in the mountain-forests; and the quantity of this article that could be brought into the market, if prices suited, may be computed at not less than 12,000 bales a year. This silk is of different qualities, according to the process and care adopted in reeling it from the cocoons; and some of it is well adapted for manufactures. The natives weave plain silk goods from it, called "pongees," and about 100,000 pieces of these stuffs could be bought annually."

‡ Those who desire to refer to it will find it printed *in extenso* in the 'Commercial Reports from H.M. Consuls in China and Japan, 1865,' Lond. 1866.

sionally lighted. In spite of all this, however, the temperature of a Chinese dwelling in the mountain-silk district is during the greater part of the winter considerably below the freezing-point. The worm, being indigenous, could doubtless stand the cold of the winter's night in its cocoon on the bushes on which it forms these latter; but, apart from theft, destruction by wild animals, insects, &c., it is probable that in nights of unusual severity only the strongest and best enclosed might escape perishing from cold.

"The natural heat of spring suffices to bring the chrysalis out of the cocoon in the butterfly shape. The butterflies then couple, and in about four or five days after impregnation the female lays eggs. They are laid on native paper spread on mats, tables, &c. In about five or six days, from each of these eggs is produced a small worm of about the size of a black ant, and which is black in colour. This is about the time when the buds on the oak bushes have begun to make their appearance. This must be in the last half of April. The young leaves are forced, by twigs being cut off from the bushes and placed in water—in pools of the mountain-streams, or in tubs in houses. From these the young tender leaves are taken, and are scattered over the paper, as the worms appear from the eggs. The worms are thus nourished for some days, when they are transferred to the youngest, most tender-leaved oak bushes on the hill-slopes. They are then about an inch in length, but are still black in colour. The transfer of the whole does not take place in one or two days. There is during the whole existence of the animal in its worm stage a difference of eight or ten days in the backwardness or forwardness of individuals. After some days the worm has its first sleep or torpor, at the close of which it changes its skin, and reappears green in colour and larger in size. It has, in all, four of these sleeps or torpors, each of which lasts about two days. It changes its skin, and becomes larger after each torpor, but retains after the first the same bright green colour. For its next, or fifth sleep, it prepares by spinning itself into a cocoon, in which it assumes the chrysalis shape, then bursts out as a butterfly and lays eggs, from which the small black worms are produced, when the processes just described are gone through again. These processes are, in the spring season, more rapidly performed than the similar processes in the autumn. The silk-growers told me that those of spring required about 60 days, those of autumn about 100. In each season, as fast as the worms consume the leaves on one bush, they are removed by the

attendant silk-cultivators to another, the youngest bushes being used first.

"The worm is fed on three kinds of oak bushes, called *small 'tsing-kang-lew,' large 'tsing-kang-lew,'* and '*hoo-pö-lö.*' The only difference between the small and the large *tsing-kang-lew* seemed to me to lie in the acorn-cup, that of the former being smaller and also smoother outside than that of the latter. As for the *hoo-pö-lö* oak, its leaves are much larger and darker than those of the large or small *tsing-kang-lew*. Its acorns are also much larger, and, what at once marks the difference, the cup, instead of a hard exterior, rendered more or less rough by small, hard protuberances, is covered with longish feathery filaments, which give the cup the appearance of a small fur cap.

"The yield of the spring crop is said to be much less than that of the autumn crop, 1000 cocoons of the former giving no more than 500 of the latter. But the quality is said to be greatly superior—finer, whiter in itself, and more capable of taking dyes; but black, with various shades of reddish brown or purple, seem to be the only dyes that either kind will take.

"The chrysalids which are not kept for breeding are used by the Chinese as an article of food.

"The mountain silk remains as yet the one article which this district is likely to furnish to England. My explorations of last summer convinced me that I did not, in my last Report, over-estimate the extent of country in which it is produced when I said 150 miles by 100. On the other hand, instead of saying that 'not one-fourth part of the hill-sides' suitable for the oak bushes is planted with them, I should now say that not one-tenth part is so planted. Viewing the nature of the article and the quantities that are now and that could be furnished, the trade could be developed into one of appreciable importance even for our great manufacturing interests, unless exactions and jealousies of the local mandarins interposed to repress it."

Being desirous of ascertaining the particular species of oaks on which this sericiferous larva feeds, I, in July 1867, invited, through the medium of 'Notes and Queries on China and Japan,' a very useful periodical published at Hongkong, any gentleman who might be willing and able to assist in the inquiry, to communicate specimens of the foliage and fruit.

My invitation was most kindly responded to by Mr. E. C. Taintor, an American gentleman in the service of the Chinese Imperial Customs, who, in December last, sent me specimens, the

leaves nearly all gathered separately, but well dried, packed up carefully, and labelled to correspond with the acorns, accompanied by the following memorandum:—

“The number of ‘Notes and Queries’ which contained your request for leaves I found awaiting me, on my return about the middle of August from a short trip into the country, about 20 miles east from Newchwang, on which trip I had noticed, in a pleasant little valley, quite a number of oak shrubs, with the acorns still green, but of full size. Being on horseback, however, I did not gather any of them. After seeing your note, I endeavoured to obtain some of the leaves, in accordance with your request, but was unable to do so until the 11th of October, on my return from a visit to Moukden. The locality is the Ts’ien shan or Thousand Mountains, which enclose a magnificent valley about 60 miles south of Moukden, and 70 north-east of Newchwang. Many of the leaves, as you will observe, had already turned brown; and as my time was limited, I was obliged to take such as I could find. The silk-culture is not carried on so far north as this, the silk-producing district lying, as stated by Mr. Meadows, to the south-east of Newchwang; but I was assured by the priests that the leaves marked 1 and 3 are identical with those used for the above purpose further south.

“The leaves marked 1 are those of the ‘*siao-yeh tso-shu*,’ or small-leaved oak, and are used for feeding the large silk-worms. A package of acorns bears the same number, as also a small branch of the wood. This species was quite abundant, and varied from a bush 3 or 4 feet in height to a tree of 15 or 20 feet*.

“The leaves marked 2 are those of the ‘*ta-yeh tso-shu*,’ or large-leaved oak, which, as I was told, are not used for feeding the silkworm. The under surface of the leaves and the young bark were covered, to a greater or less extent, with a downy pubescence, still observable on some of the former. The cup of the acorn is very noticeable. This species was the most abundant, in many places covering the mountain-sides, and appeared mostly in the form of a bush 3 or 4 feet in height, with occasionally one of 8 or 10 feet.

“On my ascent of one of the mountain-peaks, I picked two or three leaves (marked 3), which attracted my attention as being

* According to Regel (Tent. Fl. Ussur. 130), it attains a height of 40 feet in Russian Manchuria.

more sharp-pointed than any I had noticed, and intended on my return to gather more, but could not find the tree again. It was the only one of the kind that I saw; and no acorns were to be found on or under the tree. These leaves also are, according to my informant, used to feed the silk-worm. The same name was given to the tree as to No. 1; but the pointed leaf was so characteristic that it seemed to me to be a distinct species."

The first species alluded to in this note is no doubt referable to *Quercus mongolica*, Fisch., a tree which, according to Maximowicz*, extends northwards to Albasin, at the mouth of the Amur, in 53° 10' N. lat., and has been traced thence in a westerly direction to Nerczinskoi Sawod, on the Argun, the eastern limit of the Government of Irkutsk, in about 120° E. longitude. I have, indeed, seen no authentically named specimens of this; but those of Mr. Taintor accord so precisely with the diagnoses of Turczaninow†, Ruprecht‡, Carruthers§, and A. De Candolle||, that there can, I think, be no question of their identity. A. De Candolle's description of the cupule (which is sericeous inside) as having "squamas imbricatas, adpressas, dorso convexas," is very accurate, much more so than that of Regel and Carruthers, as being "squamis gibbosis muricata:" there is no murication, or squarrose spreading of the scales; nor do I find the upper ones "apice truncatas" as De Candolle describes them, but, rather (though "cupulam non excedentes," in the words of Carruthers) like the lower ones, acuminate from a broad ovate base. As I believe the *hilum carpicum* in oaks to afford useful characters, hitherto almost entirely neglected, I may add that in this species it is circular, convex, slightly elevated, and constricted by a defined ring, concolorous or paler than the glans, and a good deal rugulosely fissured. And, since I learn from Prof. Oliver that Prof. Ørsted has recently published a dissertation on the classification of oaks, in which he lays much stress on the form of style and stigma, it may not be useless to observe that the style is very short and thick, tomentose, like the summit of the glans, which is often depressed, and that the three stigmas are spatulate at the apex, with their edges cucullate, or almost plicate, joining at the base. The leaves are shining above, opaque and glaucescent beneath, and, when

* Prim. Fl. Amur. 390, and map appended to work.

† Flor. Baic.-Dahur. ii. 136.

‡ Der erste botan. Nachtrag üb. d. Amurland, 432.

§ Linn. Journ. Bot. vi. p. 32.

|| Prodr. Syst. Reg. Veg. xvi. sect. ii. 14.

young, dotted with short white hairs : the full-grown ones have also usually a few long weak hairs along the costa and primary veins ; but these are scarcely to be noticed without a lens. I believe my *Q. Fabri* to be the nearest ally of this species, though abundantly distinct.

The specimens of No. 2 belong to *Q. dentata*, Thunbg. M. De Candolle* hesitates to acknowledge the identity of Bunge's *Q. obovata*, asserted independently by Miquel† and myself‡, since the former author makes no mention of the fruit ; the precise agreement, however, of the cups and acorns in a Japanese specimen from Mr. J. G. Veitch with those of the Chinese plants enables me to affirm positively that they are conspecific. With regard to M. De Candolle's remarks on the floral structure, I find in the only specimen in blossom in my possession (a Yokuhama one, from the herbarium of the Petersburg Botanic Garden) that the male amenta are naked at the base, then interruptedly lax and gradually dense-flowered towards the apex, the flowers quite destitute of bracts, and the large anthers borne on filaments about as long as themselves. In this species, as in *Q. Championi*, Bth.§, the stellate hairs on the underside of the leaves spring from a yellow glandular base. The cup has the lower scales appressed, thickened, ovate, and acute ; they become gradually longer and more squarrose, the upper and inner ones being very numerous, 9 to 10 lines long, subulate, at first erect, and then more or less, often strongly reflexed, like the involucrel squamæ of a Teasel, surmounting the acorn somewhat, which, however, is twice as long as the cup proper ; all are flat, canescently sericeous outside, of a deep bright brown inside, thinner and paler towards the margins, like the paleæ of many Polystichoid *Aspidia*, scarious and stiffish in texture, like the involucrel bracts of a *Helichrysum*. The cupule is tomentose inside, 4-5 lines across, and of equal depth, with the margin erose, to which the deeper-coloured free scales form an external fringe, rising straight up for a height of 4-6 lines. The glans is perfectly glabrous, of a testaceous or alutaceous brown (nearest to the ochre-yellow, No. 73, of Syme's edition of Werner's nomenclature of colours), ovoid (not subglobose as described by Bunge||), with an almost flat concolorous

* *Op. cit.* p. 13.

† *Ann. Mus. Lugd.-Bat.* i. 105.

‡ *Ann. Sc. nat.* 4^e sér. v. 243.

§ Seemann, *Bot. Voy. Herald*, t. 90 ; Hance, in *Seem. Journ. Bot.* i. 180.

|| *Enum. Pl. Chin. Bor.* p. 62.

carpical hilum marked inside its periphery by a circle of numerous slight depressions, looking as if caused by its being stretched and pricked with a needle. The style is very remarkable; it is stout, and attains a length of 2 lines or rather more, and is dilated at the summit into a distinct cup, densely woolly outside, which I can only compare to the *indusium* of *Goodeniaceæ*, inside which the dark-coloured spathulate stigmata, three to five in number, project. The cotyledons are plano-convex and entire. Altogether, the fruit has a certain resemblance to *Q. cerris*, L.*, though both in that and *Q. pseudo-suber*, Santi, I find the cup-scales much more rigid and solid, and triangular in section instead of flat. Still, I think it not improbable that its true affinity is rather in this direction, notwithstanding that its fruit is described, apparently correctly, as annual in ripening. The extreme closeness of *Q. suber*, L., and *Q. occidentalis*, J. Gay†, which M. De Candolle regards‡ as “species physiologicæ potius quam morphologicæ,” seems to indicate that this character is of very slight value. *Q. macranthera*, F. & M., which Blume§ says is scarcely distinct, is described by A. De Candolle as having a broader cup, the scales of which are said not to overtop it, with an acorn twice the length. From the written diagnosis given, Thunberg’s species would fall into the section *Elacobalanus* of Endlicher and Gay||, and perhaps amongst the *Mesolepidia* of Kotschy¶. The shrub must be handsome when growing, as the leaves, one of which in my possession measures 13 inches in length, seem to turn of a fine purple-red in autumn. It will be noticed that Mr. Taintor was told that this oak is not used for feeding the silkworm; but, as it possesses all the distinctive characters assigned by Mr. Meadows to his *hoo-pö-lö*, viz. the larger darker leaves, larger acorns, and cup covered with longish feathery filaments, I suspect they are identical.

Mr. Taintor’s supposed third species is represented by two leaves only. These are slightly narrower, oblong rather than obovate, and less broad-pointed than the others of *Q. mongolica*; but I can see no other difference, except that the short white hairs

* Kotschy, Die Eichen Europa’s, t. 20 (*Q. austriaca*).

† Kotschy, *op. cit.*, t. 33 (*Q. suber*).

‡ *Op. cit.* p. 44.

§ Mus. Lugd.-Bat. i. 298.

|| Endlicher, Gen. Plant. Suppl. iv. pt. 2. p. 24; J. Gay, in Ann. Sc. Nat. 4^e sér. vi. 240.

¶ *Op. cit.* Einleit.

on the under surface are somewhat more conspicuous under a lens. I do not at all think they come from a distinct plant; and the form of leaf in the genus is avowedly very liable to variation*.

I avail myself of the opportunity, as I am writing on oaks, to mention that I find the resinous juice I first noticed † as abounding in my *Q. Irwinii*, and which I regarded as corroborative of the affinity of *Corylaceæ* and *Juglandaceæ*, to be present in *Q. Teijsmanni*, Bl., and in an undetermined species in my herbarium from Penang.

Apart from the interest attaching to the scientific determination of a plant of any considerable economical utility, the identification I have been able to arrive at, through the enlightened interest in science shown by Mr. Taintor, of the ordinary silkworm-oak as *Q. mongolica*, may, if I am not mistaken, lead to results of infinitely greater importance. The perfectly hardy constitution of the oak-silkworm is undeniably proved by the quotations above made from Mr. Meadows's Report; and since both *Q. mongolica* and *Q. dentata* belong to the *Lepidobalani*, and are closely allied not only to the common oak of northern Europe, to which, indeed, Pallas referred the former, but to the whole of the species which extend through that continent and the temperate regions of western Asia, there seems no reason whatever why this insect should not be thoroughly domesticated with us: it would probably thrive as well on *Q. robur* as on the Mongolian oak ‡, and

* "La forme du limbe varie fréquemment, sur le même rameau, d'une ellipse allongée (oblongue) à la forme ovée ou obovée, avec toutes les transitions intermédiaires."—A. DC., in Ann. Sc. Nat. 4^e sér. xviii. 63.

† Ann. Sc. Nat. 4^e sér. xviii. 231; Seem. Journ. Bot. i. 183.

‡ I consider this assumption to be justified by the extreme—indeed, extraordinary affinity of the usually recognized species of *Lepidobalanoid* oaks. In illustration I may note that, of the 40 figured as species by the late Dr. Kotschy in his noble work, no less than half are reduced to the rank of varieties by M. Alph. De Candolle, who, furthermore, in his erudite and exhaustive 'Etude sur l'Espèce dans les Cupulifères,' shows an evident leaning to regard many of those now acknowledged as being rather "espèces provisoires." Dr. Hooker, again, in his interesting treatise "On three Oaks of Palestine" (Trans. Linn. Soc. xxiii. 381 sqq.), reduces about 27 species, so called by one or other of the ultra-analytic school of botanists, and 9 of which are admitted by M. De Candolle as distinct, to 3. Dr. Cosson confounded the South-European and Algerian *Q. pseudo-suber* with the Georgian *Q. castaneafolia*, C. A. M., which latter has been reduced by C. Koch (and by Grisebach, Spicil. Fl. Rum. ii. 336, who adds *Q. Libani*, Oliv., kept separate by De Candolle) to *Q. vallonæa*, Ky. Dr. Hooker admits *Q. castaneafolia* as distinct from *Q. vallonæa*, but is doubtful whether he should not refer to it *Q. look*, Ky., and even *Q. Libani*. He also keeps *Q. mannifera*, Lindl., distinct, whilst

should certainly in Central Europe need no protection*. The introduction of so highly important a branch of industry, promis-

De Candolle reduces it to *Q. robur*. On the other hand, Miquel declares (Ann. Mus. Lugd.-Bat. i. 104) that *Q. castaneaefolia* is not distinct from the Japanese and Manchurian *Q. serrata*, Thgb., with the Indian form of which C. Koch unites *Q. Libani*; and specimens which were by many botanists taken for the Circassian species (though considered probably different by Alph. De Candolle) were gathered in Northern China by M. Debeaux. Whilst "tantæ doctorum dissensiones" prove the intricate relationship of the species of this group, as I have above asserted, it is no wonder that they and other similar instances have largely tended to foster the heresies on the subject of species which have sprung up of late years.

* The following remarks on the climate are from Mr. Meadows's Report:—

"The result of our five years' experience of the climate may be given here.

"The following is a Table of the extreme temperatures observed. It gives information much more required by the proposing resident or traveller in new countries than mean temperatures. It shows him what extremes of heat and cold he will have to encounter at times, and for which he must be prepared or suffer severely in consequence. For mean temperatures people are rarely insufficiently prepared. The chief practical defect of the Table is, accordingly, the absence of a column showing the heat in the sunshine in summer. The observations from which it is made were all taken from Fahrenheit's thermometers suspended on the northern faces of house-walls, on which the sun never shines—therefore in the coldest and coolest places:—

Month.	Coldest.		Warmest.	
	Morning at Daybreak.	Afternoon at 2 to 4 P.M.	Morning at Daybreak.	Afternoon at 2 to 4 P.M.
January		3°	39°	
February		7	35	
March	0°	14	43	44°
April	27	41	53	50
May	41	52	65	60
June	57	70	76	68
July	62	74	79	74
August	63	73	77	85
September	41	52	73	80
October	28	42	66	71
November	7	17	52	61
December	—6	2	37	44

"The coolest months are December, January, and February. The greatest cold of a winter may occur in any of these months, but is most likely to occur in January and first half of February.

"The warmest months are June, July, and August. The greatest heat of a summer may occur in any of these months, but is most likely to occur in July and first half of August.

"The number of days in any one winter on which the thermometer stands

ing occupation and competency to thousands, is surely a worthy object for acclimatization societies, the efforts of which are too often directed to chimerical, unpromising, or futile projects—"arenas arantes."

On the Structure of the Flower in the Genus *Napoleona*, &c.

By MAXWELL T. MASTERS, M.D., F.L.S.

[Read June 18, 1868.]

THE genus *Napoleona* is one that possesses much interest, on account of its peculiar structure, the history attaching to it, the differences of opinion concerning its position in the natural system, its affinities, the number of species referable to it, &c. It has in consequence attracted the attention of botanists in no ordinary degree; and among the more eminent naturalists who have studied the genus are P. de Beauvois, A. de Jussieu, Desfontaines, Sir W. Hooker, Bentham, Lindley, Decaisne, and Planchon, not to speak of others less widely known. The discrepancies in the statements and opinions of these botanists are very great: scarcely two of them describe the plant in the same way, and even the representations that have been made of specimens supposed to

at daybreak below zero does not exceed ten; and it rarely is below zero for more than two mornings in succession. In the coldest winter afternoon it always rises above zero.

"In a cool room, with venetian blinds, the temperature does not rise above 80° except for a few hours during some twenty-five to thirty-five afternoons in each summer; and these comparatively hot days do not occur together, but are distributed, with cool intervals, in groups of three to five throughout June, July, and August. In these months the temperature always falls below 80° during the nights. In exceptionally hot summers, as in that of 1862, the thermometer may stand at daybreak at 75° to 79° for some twenty days; in cool summers it rarely stands above 70° at daybreak. As to the highest temperature of the Table, that of 85°, it has only once been attained in my library during five years; that was on the 31st July, 1862.

"All the preceding remarks refer to the climate of the port of Newchwang. The northern portions of the Consular District of Newchwang are very much colder in winter, and have shorter and cooler summers."

The mean temperature of Peking, as deduced by Kuppfer from 13 years' observations, is, spring 51°·8, summer 68°·0, autumn 50°·4, winter 29°·4. A comparison of the temperatures of various European cities, as given in Mahlmann's elaborate Tables, in the third volume of Humboldt's '*Asie Centrale*' will, I believe, prove my assertion.