VI. On the superior qualities of the ash timber which grows at Earls Barton, in Northamptonshire

B. Bevan Esq.

Species.	Icon.
14. L. *Roscida*, Fab. ...	Ernst, VI. Pl. CCXX. f. 307. a—d.
15. — *Irrorea*, Hübn....	Ernst, VI. Pl. CCXX. f. 306. a—e.
16. — *Aurita*, Esp.	Ernst, VI. Pl. CCXIX. f. 305. a—c.
17. — *Ramosa*, Fab.	Ernst, VI. Pl. CCXIX. f. 305. d.
18. — *Eborina*, Hübn...	Ernst, VI. Pl. CCXIX. f. 304. a—c.
19. — *Jacobeæ*, Linn. ...	Ernst. VI. Pl. CCXXII. f. 312. a—f.

Fam. C.—Antennæ setaceous; anterior wings broad, with semi-transparent spots; posterior wings very small: posterior portion of the body with black dots.

20. L. *Ancilla*, Linn. ...	Ernst, VI. Pl. CCXXIII. f. 314. a—e.
21. — *Punctata*, Fab. ...	Ernst, VI. Pl. CCXXIII. f. 315. a. b.

Fam. D.—Antennæ setaceous; in the male the setæ extremely delicate, and scarcely visible to the naked eye; wings broad, rounded, sub-diaphanous, with dark-coloured spots.

22. L. *Mundana*, Linn. .	Hübn. Bomb. Tab. 17. f. 63. (mas.) 64. (fœm.) f. 65. (mas.)
23. — *Murina*, Hübn....	Hübn. Beitr. II. B. 3. Th. II. Taf. fig. K. S. 66.—Bomb. Tab. 17. f. 62. (mas.)
24. — *Senex*, Hübn.	Hübn. Bomb. Tab. 55. f. 236. (mas.) 237. (fœm.)

[To be continued.]

VI. *On the superior Qualities of the Ash Timber which grows at Earls Barton, in Northamptonshire. By* B. Bevan, *Esq.*

To the Editors of the Philosophical Magazine and Annals.

Gentlemen,

HAVING been informed that the *Ash timber* which grows in the parish of Earls Barton, in the county of Northampton, and in the adjoining parishes, is supposed to possess superior qualities to any ash timber growing in different parts of the country, I obtained a specimen of it for the purpose of ascertaining, by a set of experiments, how far this opinion of its superior qualities was correct. The results of my experiments I beg leave to offer to the public through the medium of your Magazine, with a view to excite a comparison with the qualities of ash timber growing in different parts of the country. The specimen I obtained, appeared to have been taken from near the butt or lower part of a young tree. Its specific gravity was ·765. I found the modulus of elasticity to be

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957,000 pounds. Upon examining the experiments of Mr. Barlow and of Mr. Tredgold on ash timber, it will be found that the modulus of elasticity of the specimens tried by them was 1,645,187 and 1,525,500 pounds respectively; so that the *flexibility* of Earls-Barton ash, when compared with the wood tried by Mr. Barlow and Mr. Tredgold, is nearly as 5 to 3. The cohesion of Earls-Barton ash, as deduced from its transverse strength, I found to be little more than 10,000 pounds per square inch: but upon trying the cohesion by the direct longitudinal force to pull it asunder, I obtained 24,700 pounds.

Mr. Barlow gives the cohesion of ash 17,337 pounds, and Mr. Tredgold 14,130 pounds; the mean of these being 15,733 pounds: from which it appears that Earls-Barton ash is superior to those just referred to in the ratio of 11 to 7.

The *ultimate deflection* before fracture took place, according to the formula of Mr. Barlow, I found to be about $2\frac{1}{2}$ times greater than the ultimate deflection of ash in Mr. Barlow's tables.

Now if we estimate the *toughness* of wood to be in the compound proportion of its cohesive strength and its ultimate deflection, we shall have $\frac{24,700}{2} : \frac{17,337}{5} : : 12,350 : 3465$; or in small numbers, 7 : 2 nearly; which shows that where *toughness* is an essential quality, the ash growing in the neighbourhood of Earls Barton excells other wood of the same species, and tried by Mr. Barlow, in the scale of $3\frac{1}{2}$ to 1.

I am, Gentlemen, yours truly,

Leighton Buzzard, Dec. 12, 1828.   B. BEVAN.

VII. *On the Longitudes of the Trigonometrical Survey of England. By Dr.* J. L. TIARKS, *F.R.S. &c.**

MR. IVORY has proved (Phil. Mag. and Annals, July, page 10) that, according to our present knowledge of the figure of the earth, the difference of longitude between Beachy Head and Dunnose ought to be 18″ more than the result reduced in the Trigonometrical Survey; and he has subsequently (Phil. Mag. and Annals, October, page 244) endeavoured to account for a part of this difference, by proving an error in the formula by which that difference of longitude was calculated from the data furnished by the Survey. The formula is this (retaining Mr. Ivory's symbols):

$$\text{Tang } \tfrac{1}{2}\,\omega = \frac{\cos\left(\frac{\lambda-\lambda'}{2}\right)}{\sin\left(\frac{\lambda+\lambda'}{2}\right)} \text{ cotang } \frac{m+m'}{2}$$

* Communicated by the Author.