

Respiratory control is more efficient in the freshwater amphipod *Gammarus pulex* than in the marine species *G. locusta*, for in the former the accelerated pleopod beat is permanent at each increased carbon dioxide or diminished oxygen tension, while in the latter it is transitory. This greater efficiency may be necessary to *G. pulex* because its oxygen consumption is twice that of *G. locusta*<sup>7</sup>.

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Feb. 28.

- <sup>1</sup> Dahr, *Lunds Univ. Arssk.*, 20; 1924.  
<sup>2</sup> Winterstein, *Z. vergl. Physiol.*, 2; 1925.  
<sup>3</sup> Stahn, *Zool. Jahrb.*, 46; 1928.  
<sup>4</sup> Hazelhoff, *Z. vergl. Physiol.*, 5; 1927.  
<sup>5</sup> Matula, *Pflügers Arch.*, 144; 1912.  
<sup>6</sup> Alsterberg, *Lunds Univ. Arssk.*, 20; 1924.  
<sup>7</sup> Fox and Simmonds, *J. Exp. Biol.*, 10; 1933.

### 'Raw' Weather

IN NATURE of January 7, the question is raised why moist cold air should feel 'raw'. Sir Leonard Hill, in the same issue, gives an explanation very commonly accepted in physiological circles. May I direct attention to some comments on this topic made by me in the *Journal of Physiology*, vol. 57, 1923? "The uncomfortable feeling caused by cold moist air is attributed, so far as any explanation has been given, to the moist air being a better conductor of heat than dry air. This cannot, however, be the correct explanation, for the diathermic properties of all ordinary gases and mixtures of gases are very close to each other. The cause I take to be that in moist air there is a partial equilibration of the skin gel with the vapour pressure of water in the air leading to a swelling and to a diminution of the small air spaces. The swelling is, in fact, detectable with a strong lens or with a low power of the microscope. As a result of this diminished air enclosed between the epidermic scales the conducting power of the skin is increased".

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### Time Determination

I SUGGESTED a new method of observation for time determination in my letter in NATURE for October 29, 1932<sup>1</sup>, and Mr. H. L. P. Jolly has made some interesting comments thereon<sup>2</sup>. My principal aim was to find a method which would be sensibly free from systematic error. Since my first communication, observations have been obtained in India with a first experimental equipment by three observers—Messrs. Mathur, Banerji and myself on seven nights each, before I came away from India on leave; and further observations on fourteen evenings have since been made by Mathur and Banerji.

With ten stars observed, the range of variation on any one evening never exceeded 0.3 sec. For precision the equipment needs to be improved before it can compete with the moving wire micrometer method, with which at Greenwich the variation between five time stars rarely reaches 0.1 sec. But as regards personality, I think the results are encouraging. They are

$$M. - B. = 0.012 \pm 0.010 \text{ sec.}$$

$$H. - \frac{1}{2}(M. + B.) = 0.002 \pm 0.012 \text{ sec.}$$

Personality appears to be quite as small as that found with the moving wire micrometer. Perhaps it is definitely smaller—but the observations are not yet sufficiently extensive to decide this. The method, then, promises well as regards observer's personality.

As regards systematic error due to mechanical causes, Mr. Jolly has pointed out advantages of this method owing to the reduction of mechanism, which he would like to eliminate entirely. As matters stand, the shutter is very small and its motion is minute. Its very motion may be incorporated in the wireless time signal receiving circuits and so compared directly with the rhythmic signals by the coincidence method. The shutter motion may be regarded as the clock indication of time; then only variations of lag of the shutter motion, occurring during star observations and time signal reception, are significant. I fancy that there should be little difficulty in keeping this variation down to a few thousandths of a second.

For geodetic purposes of determination of field longitudes, present-day requirements will be met amply if a probable error of 0.01 sec. is not exceeded, so long as systematic error also is no greater. For fixed observatories studying variation of longitude, these limits should be reduced tenfold, if results are to be on a footing with those of observations for variation of latitude.

Survey of India. J. DE GRAAFF HUNTER.

<sup>1</sup> NATURE, 130, 666, Oct. 29, 1932.

<sup>2</sup> NATURE, 130, 964, Dec. 24, 1932.

### The Borrowed Days

IN the Calendar of Nature Topics in NATURE of March 25, page 445, there is a note about this legend. No reference is made, however, to the change from the Julian calendar to the Gregorian, whereof the effect at the present time has been to cause April 10-13 new style to correspond with March 29-31 old style.

The legend itself was no doubt in full currency long before the change of calendar; witness the following passage in "The Complaynt of Scotland", published in 1549.

"There eftir i entrit in ane grene forest, to contempill the tender yong frutes of grene treis, becaus the borial blastis of the thre borowing dais of Marche had chassit fragrant flureise of evyrie fruit tree far athwart the fieldis."

Among Scottish country folk the legend still runs in rhyme, thus:

"March says to Averil,  
I see three hoggs on yonder hill.  
If ye will lend me days three,  
I'll find the way to mak them dee.'  
The first day it was wind and weet;  
The second day was snaw and sleet;  
The third day it was sic a freeze  
It frose the birds' nebs to the trees.  
When thae three days was past and gane,  
The silly hoggs came hirpling hame."

Hoggs in Scots are not swine, but two-year-old sheep.

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