the high almost invariably observed on the northwestern quadrant. The air thrown or carried up through the funnel of the cyclone remains in this situation more than in any other part of the region corresponding to the circumference of the cyclone. For to the south at this high level the translatory and rotatory movements correspond to and in a large measure neutralize each other. To the west the current of the cyclonic mass is transverse and not counter to the constant overcurrent, and besides, the flow having just emerged from the great friction of the northern side, has had its mass deeply shorn when it leaves the northwestern quadrant. On the eastern aspect, the masses of air carried up and thrown out by the cyclone move onward even at a more rapid pace with the overcurrent and are carried out of the way, giving rise to the cirrus clouds usually seen under such circumstances. A high then must accumulate on the northwestern quadrant. As soon as the cyclone has passed any given point, the 'high' begins to flow out in obedience to the laws of equilibrium. To the east it is hindered by the snarly cyclone. To the north it is hindered by the conservation of areas due to the narrowing meridians and perhaps the undertow equatorward. To the southeastward, then, it must escape into the depression created by the passing cyclone.

The blizzard.—If this outflow of the high finds a lofty and long range of mountains running north and south, these will behave as one of the banks of a great river or one side of a river bed in causing the mass to take on a spiral form of movement. By this movement the atmosphere will be continuously climbing obliquely up the mountains on the western side, while on the eastern border of the spiral the cold dry air will be as continuously drawn down from the upper regions. The western blizzard is such a current, and the Texas norther its continuation.

The great majority of our cyclonic 'laws,' however, do not originate in the tropical north Atlantic, but in the tropical north Pacific. They arise over the innumerable islands found in that region, move west till deflected by the Asiatic mainland, carrying rain and moisture to various distances inland, and then they veer around till, caught in the eastward overcurrent, they are carried eastward across the Pacific, the American continent and often across the Atlantic, and far into the eastern hemisphere again before being arrested.

This is not to deny that cyclones may be formed in other ways, though it may be hard to see how; but since cyclones without number are formed over tropical islands ready to start on their travels, how else can it be than that some of them are caught up in the way described and borne away on their earth-girdling journey?

D. T. Smith.

SPECIAL ARTICLES.

A CONTRIBUTION TO THE HISTORY OF THE CONTROVERSY OF FLAMSTEED WITH NEWTON AND HALLEY.

The library of the United States Military Academy at West Point owns a fine copy of Flamsteed's 'Historia Britannica Cœlestis' (London, 1712) which is without any manuscript notes or corrections. To one of the fly leaves a single folio leaf was fastened: 'An estimate of the number of folio pages that the Historia Britannica Cœlestis may contain when printed,' which is dated 'The Observatory, Nov. 8, 1704.' On the blank side of this leaf is written, by Flamsteed himself, the words: 'Mr. Flamsteed's Estimate.' The printed folio page is set up in paragraphs, and Flamsteed has written comments opposite to many of them. As other copies of the 'Historia Britannica Cœlestis' probably contain this folio estimate, I will copy here the MS. comments only, not the paragraphs to which they refer.

The first seven lines of paragraph 1 refer to Gascoigne's observations; they are enclosed by a MS. brace; Flamsteed's comment is:

These are not yet printed, being reserved to be inserted in the preface.

The last four lines of paragraph 1 refer to observations of eclipses, Jupiter's satellites, sun-spots, comets, etc., taken with a large sextant, etc., between the years 1675 and 1689 at Greenwich; they are enclosed by a MS. brace; the paper at the margin is torn here, but I make out Flamsteed's comment to be:

Printed at his Mr. John (leaf torn)
charge on bad paper (leaf torn)
not so correct as they ought (leaf torn)
in 100 sheets.

The second paragraph relates to meridional distances, transits, etc., observed between 1689 and 1704. A brace encloses its four lines, and Flamsteed's comment is:

A fair copy of these on 175
sheets was put into Sr. Is. New (paper torn)
hands Mar. 20 1707/8 to be printed.

N. B. The figures that give the year are here somewhat doubtful, but see below.

The third paragraph is divided into numbered sentences. The first seven relate to Ptolemy's and other catalogues of stars; they are included within a MS. brace; Flamsteed's comment is:

These be ready to be transcribed.

Sentence 8 of paragraph 3 (5 lines) relates to the British Catalogue of 3,000 stars; a MS. brace encloses it; Flamsteed's comment is:

These are printed at my own charge.

N. B. The wording here makes it evident that the MS. notes in this handwriting are by Flamsteed himself.

The next four lines of the text have no MS. comment, but the succeeding three are printed as follows:

"The New Figures of the Constellations, or the Ancient Ones restor'd (those in *Bayer,* and on our Globes being false, and different from all the Catalogues in all Languages) in about Sixty Copper Plates, each near Two Foot broad, and Twenty Inches deep, with a Preface."

This sentence is enclosed in a MS. brace and Flamsteed's comment is:

These were altogether necessary and
ought to have been first taken
care of but were designedly
neglected by Sr. Is. N. to spoyle
ye whole.

The next printed words relate to part first of the proposed book. A MS. mark refers to the foot of the page where Flamsteed's MS. comments are written, as follows:

The first part was printed off in October 1707. March 20 1707/8 Sr. Is. Newton had 175 sheets put into his hands to be printed, of which what is become J. F. knows not, save that E. Halley has printed some sorry Abstracts of a part of them without J. F's knowledge and consent.

At the foot of the page are two MS. queries by Flamsteed, as follows:

1. *Qs. What is become of £1200 allowed for ye work per Prince George.*
2. *What is become of all Copies already Printed.*

At the foot of the page there is a line of MS. written by another hand in a different ink, as follows:

Memdm. J. F. told W. L. at ye Treasury Office that E. H. had stolen 2 or 3 of his best fixed stars.

Those who wish to follow the rather complicated quarrel of Flamsteed with Newton and Halley can find a sufficient and fair account of the controversy in the 'Dictionary of National Biography,' Vol. XIX. (Article Flamsteed—see also Newton and Halley). It is of extreme interest to have found Flamsteed's own comments on the controversy. The MS. referred to has, by direction of the Superintendent U. S. M. A., been deposited with the Royal Society of London, which possesses many of the manuscripts of Flamsteed, Halley and Newton.

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A BETWEEN SEASON BIRD FOOD SUPPLY.

AN apparently unnoticed food supply for birds is found in the heaps of drift, the flotsam and jetsam cast up along the shores of rivers, creeks and other bodies of water. These places are much resorted to by crows, jays and blackbirds, and probably most of the sparrows feed about them from time to time. As they exist during the winter and early spring when food is not easily accessible over the whole country, they are probably welcome stores to our winter birds.

In order to ascertain the character and quantity of available bird food in these drift heaps I filled a half pint tin can with the material, scraping it in at random from the surface of one of them. Besides the bits of