sing during the coldest winters. That a few migrate to the coast of South Carolina and Georgia at times is evinced by the capture of one by Mr. Herbert Ravenel Sass at the Navy Yard, Charleston, on October 17, 1907, and by the writer seeing one near his home on October 16, 1907. (See Bull. Chas. Mus. III, 1907, 54; and Auk, XXV, 1908, 87.)

Hylocichla aliciæ bicknelli. BICKNELL'S THRUSH.— In the collection of birds received from Mr. Perry there is a very small specimen of this race that is wrongly labeled by him "Olive B.[acked] Thrush." Although the sex was not determined it is doubtless a female, and was taken at Savannah by him on May 16, 1910. There is a malformation of the maxilla which is very nearly a quarter of an inch shorter than the mandible. Upon comparing this bird with specimens of *aliciæ* from South Carolina, in which both males and females are represented, Mr. Perry's bird is an inch smaller in length than any female I have and the "make up" of the bird is much lengthened. Bicknell's Thrush is a rare bird in South Carolina, and I have taken but a single individual on May 10, 1900. How this bird manages to reach its breeding grounds in the Catskills and Nova Scotia without passing through South Carolina, is a puzzle.— ARTHUR T. WAYNE, *Mt. Pleasant, S. C.*

RECENT LITERATURE.

Dwight's Review of the Juncos.[1]— Dr. Dwight, in the brochure before us, has contributed to ornithological literature a philosophical discussion of a high order. His paper is most welcome not only because we have too few of like character, but also because of the amount of painstaking study and deep thought that this especial treatise represents.

The paper may be considered under two heads, (1) as a systematic arrangement of the species and subspecies of the genus Junco, and (2) as an attempt to define by criteria the species, subspecies and hybrid.

The results from a systematic point of view may conveniently be compared with those of Mr. Robert Ridgway's study of the same group. Comparison with the A. O. U. 'Check-List' is hardly necessary since it is no secret that the arrangement of the genus there adopted was in the nature of a compromise and represented no detailed original research. Comparing, therefore, the species and races recognized respectively by Dwight and Ridgway and the names employed by them we find that each

[1] The Geographic Distribution of Color and of other variable Characters in the Genus Junco: a new Aspect of specific and subspecific Values. By Jonathan Dwight, M. D. Bull. Amer. Mus. Nat. Hist., Vol. XXXVIII, Art. IX, pp. 269–309. June 1, 1918.

distinguishes nineteen kinds of Juncos, although two of these, *montanus* and *dorsalis*, regarded as species by Ridgway, are considered to be hybrids by Dwight and therefore unworthy of formal recognition in his scheme. In the other forms the names employed are identical in thirteen cases and in three of the remaining four they differ only in being treated as subspecies by Dwight and as full species by Ridgway. The other form *shufeldti* of Ridgway is renamed *couesi* by Dwight on the rather questionable claim that the type specimen of *shufeldti* is a winter straggler of *oreganus*.

That Mr. Ridgway, always a "liberal" in the matter of geographic races, and Dr. Dwight, a pronounced "conservative" in systematic work, should come to such substantial agreement is doubly gratifying because it was unexpected, and we have the satisfaction of feeling that the arrangement of the Juncos is substantially settled. Viewed from the second standpoint Dr. Dwight's paper opens up a wide field for discussion. Years ago in 'Science' Drs. C. Hart Merriam and J. A. Allen engaged in a lengthy discussion on the relative values of intergradation and degree of difference in the designation of species and subspecies. Whether we are any nearer to a solution of the problem now than we were then or whether the determination of what is a subspecies and what is a species can, from the very nature of the case, ever be anything but a matter of individual opinion is a question.

Dr. Dwight lays down the law that "The species is the unit; the subspecies is part of the unit; and the hybrid is an individual that is part of two units," and again states that: "a species has one or more intrinsic characters or a combination of characters not shared by another species. The characters are qualitative," while "a subspecies shares all the characters of its parent species in greater or less degree. The characters are quantitative and without a break in the continuity."

This is all very well but would we not be quite as justified in saying that the subspecies is the unit and that the species is an assemblage of subspecies having certain characters in common? Furthermore how are we always to distinguish between qualitative and quantitative characters? We must all admit that a species in the course of evolution is derived from a subspecies and we must therefore necessarily find all intermediate stages in the change from quantitative to qualitative characters and in deciding where to draw the line we are confronted by the same old problem which is bound to bring in personal opinion. Dr. Dwight is apparently endeavoring to devise a method of naming specimens from the characters which they present and no doubt intentionally he discards so far as possible the geographic problems involved — isolation, intergradation, environment etc. This it seems to the reviewer we cannot do. We are naming forms which are the result of evolution and are bound to consider every factor involved. We necessarily find species and subspecies differing from one another by every conceivable degree of difference and no set of criteria will serve as a rule by which everyone can decide which forms are species, which subspecies and which are not worthy of recognition at all. We cannot solve

such a problem by mathematical rules or with mathematical accuracy because systematic zoölogy is of necessity not an exact science.

To take an example from another group we wonder how Dr. Dwight would arrange the smaller Thrushes according to the criteria which he has laid down. Could not the differences between the Olive-backed and Gray-cheeked Thrushes be regarded as quantitative or qualitative according to the viewpoint of the individual? As a matter of fact the Gray-cheek was regarded as a subspecies of the Olive-back until it was found that forms of the two bred side by side without intergradation. In this connection it is interesting to note Dr. Frank M. Chapman's method of handling the subspecies problem in his recent work on the birds of Colombia. He says; "To lay down a certain rule and blindly be governed by it, is to handicap one's discrimination and experience. . . . . The degree, and particularly the character of the differences exhibited, range, environment, faunal areas, the relative plasticity of the species in question, the action of other organisms in the regions concerned under similar circumstances, these and other factors, such as habits, voice etc., are to be considered in reaching a conclusion regarding the status of any form."

In this discussion we would not be understood as reflecting upon the excellent work that Dr. Dwight has done on the Juncos with the results of which we are in substantial accord. Furthermore we have always believed (cf. The Condor, March, 1903) that a plan might be devised — an arbitrary consensus of opinion if need be — by which a long series of races widely divergent at the extremes of the series but all apparently intergrading, could be broken up into specific groups, while forms widely separated geographically but differing very slightly from one another could be regarded as subspecies. A happy compromise as it were between the 'degree of difference' principle and that of 'geographic intergradation' which would vastly enhance the meaning which our names are supposed to convey. This is apparently just what Dr. Dwight is striving for but that any set of rules can be laid down by which anyone may determine the proper rank of a given form seems from the very nature of the case impossible.

One point that Dr. Dwight brings up in connection with his discussion of the race of *Junco oreganus* deserves special consideration. At a single locality within the range of *J. o. thurberi* he finds some breeding specimens which would on color alone be better referred to *J. o. oregonus* and *J. o. couesi* and he contends that if we are naming the *birds* and not the locality, these specimens should bear the names of these races rather than that of the race to which the vast majority of the individuals at that locality belong. Here our author is disregarding everything but color. It is a foregone conclusion that all the breeding birds at this locality belong to the same stock and should bear the same name with a comment if need be on aberrant characters. They are simply evidence of that intergradation of the three forms which shows them to be subspecies. This intergradation may be found in the area where the breeding ranges join, in which case it is manifest in a majority of the individuals, or it may be found in a large

series well within the range of any one of the races, where it will be manifest in only a few individuals. The serious point is that migrating or winter individuals are often recorded as representatives of races not normally to be found in the locality in which they are taken, whereas as Dr. Dwight shows they may very likely be merely aberrant examples of the race regularly occurring there — individuals such as we have been discussing. Such records in the case of slightly differentiated races had better not have been published no matter how experienced the authority who has identified them, and they should be given very slight attention in connection with questions of distribution or migration.

In discussing this matter Dr. Dwight in order to emphasize his points makes use of two provisional names '*cismontanus*' and '*transmontanus*' which cannot according to our code of nomenclature be construed in any other way but as new names which will become synonyms respectively of *Junco hyemalis hyemalis* and *J. oreganus couesi* although there is no knowing when they may come in for serious consideration should it be deemed desirable to erect other races or should one of the above names become invalid. They will then form bad stumbling blocks for the systematist as no types or type localities are mentioned. Dr. Dwight departs from the rules of nomenclature too when he emends Townsend's name *oreganus* into *oregonus* for which there seems no excuse since Oregan was the spelling generally used in Townsend's time.— W. S.

Soper on the Birds of Edmonton.[1]— Mr. Soper has prepared a briefly annotated list of 143 species found in the vicinity of Edmonton, Alberta, based upon his observations during the years 1912 to 1914 together with such notes on the region as occur in Macoun's 'Catalogue of Canadian Birds.' The whole makes a useful and apparently pretty complete list for the locality. In commenting upon the character of the bird life the author calls attention to the fact that Edmonton is in the same latitude as southern Labrador and Ungava although its climate compares favorably with that of southern Ontario which accounts for the presence of many birds which would hardly be expected at such a high latitude.— W. S.

Wood on the Birds of Alger County, Michigan.[2]— To further the work of the University of Michigan's zoölogical explorations in the Upper Peninsula, Mr. George Shiras, 3rd., placed his summer home in Alger County at its disposal as a field headquarters and the present paper comprises a list of 120 species of birds observed there by Mr. Wood during a residence, from May 24 to July 27, 1916. The list is briefly annotated and some previous observations of Mr. Shiras are included.— W. S.

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[1] The Birds of Edmonton. By J. Dewey Soper. The Ottawa Naturalist, February and March, 1918. pp. 129–134 and 145–149.

[2] Notes on the Birds of Alger County, Michigan. By Norman A. Wood. Occasional Papers, Mus. Zool. Univ. of Mich., No. 50, April 8, 1918. pp. 1–15.