period of small waves. In some cases the beach is removed and rebuilt several times during a season, provided there are long calm periods alternating between storms.

On the other hand, there is much evidence of temporary shifting of sand along the beaches and there are times when cutting at one part of a beach is accompanied by fill along another portion. The records obtained from the beach extending south of Scripps Institution show cases of this nature and the observation of currents at the end of the pier show the reason for the shift of the sand. However, these lateral shifts are on the whole subordinate to the outward and inward movements of the sand as evident from the shoaling and deepening of water recorded several hundred feet from shore.

Leypoldt appears to be disturbed by the idea that oscillating wave motions are accompanied by shifting of sand both toward the land and toward the sea. The study of rip currents[3] gave some data in this regard. Also the study of the effects of different kinds of waves[4] in relation to the shifting revealed that large waves of long period shift sand seaward most effectively, whereas small waves of small amplitude shift sand towards the land.

Leypoldt's hypotheses as to the cause of seasonal fluctuation in sea-level heights are as ungrounded as are those concerning sand movements. He states, "Sea-level heights are functions of rainfall in the locality, together with river discharge and other methods of ground-water return, and water removal for rainfall." Observations from the tide staff at La Jolla show that sea level here is usually highest during the months of least rainfall, when the Southern California rivers are dry, and when the water has its highest salinity. The more plausible explanation of sea-level fluctuation is based upon the fluctuations in water temperatures.[5]

Other statements by Leypoldt, such as "When sea level is high along the Pacific coast of the United States it is low along the South American coast, necessitating an interchange of water between the hemispheres," are made without giving any data whatsoever, so that one wonders if they are not also based on some of Leypoldt's hypothetical hunches. It is to be hoped that in the future Mr. Leypoldt will make some attempt to investigate the facts before he lets these wild ideas loose on the scientific public.

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[3] F. P. Shepard, K. O. Emery and E. C. LaFond, *Jour. Geol.*, 49: 337–369, 1941.

[4] E. C. LaFond, *Proc. 6th Pacific Science Congress*, II: 795–799, 1939.

[5] E. C. LaFond, *Jour. Marine Research*, 2: 1, 17–29, 1939.

ON TOAD AND FROG ABUNDANCE AFTER HEAVY RAINFALL[1]

GUNTER'S observation on the exceptional abundance of young toads after a season of very heavy rain in southern Texas[2] prompts me to record my observations on the same type of phenomenon in Oklahoma during the same year. A total of 29.02 inches of rain was recorded at Norman, Oklahoma, during the first half of 1941, of which 25.22 inches came between April 1 and June 30. There were 12.02 inches in June alone. Comparable amounts were recorded in many other parts of the state. The extensive flooding formed temporary pools which did not completely evaporate in some regions till mid-summer. From early in April till near the end of June, extensive choruses of Amphibian voices could be heard almost any night and often during the day immediately after a rain. There was a greater opportunity for all forms to breed than had occurred here for many years.

The various species reacted differently, however. The flooding produced many more young than usual of: (1) *Bufo cognatus* Say—literally millions emerged from pools from early May to early June; (2) *Pseudacris streckeri* Wright and Wright; (3) *Pseudacris clarkii* Baird—choruses were so heavy as to be deafening at times, hundreds of thousands of young emerged; (4) *Microhyla olivacea* (Hallowell); (5) *Scaphiopus bombifrons* Cope; (6) *S. hurterii* Strecker; and (7) *Rana sphenocephala* (Cope). I could find no evidence that the successful reproduction of the following had been materially increased: (1) *Bufo a. americanus;* (2) *B. w. woodhousii* Girard; (3) *Acris crepitans* Baird; (4) *Hyla v. versicolor* Le Conte; and (5) *Rana catesbeiana* Shaw. All the above pertains to the region of Norman, Cleveland County.

In southeastern Oklahoma, neither *B. a. americanus, B. w. fowleri, Rana clamitans* Latreille, *R. catesbeiana* nor *R. a. areolata* Baird and Girard reproduced successfully in exceptionally great numbers, but *Pseudacris triseriata* (Wied), *Microhyla olivacea* and *Rana sphenocephala* did so.

It should be recorded also that autoists traveling U. S. Highway 66 between Oklahoma City and central New Mexico reported "thousands of young toads" on the road at night in June. Many similar reports from southwestern Oklahoma lead me to believe that *B. compactilis* was very productive, since this is the toad in that region most likely to frequent roadways in numbers.

The differential reactions of these groups of species is in complete accord with the view that some species are specifically adjusted to a grassland habitat in their breeding activities, whereas others are not. For

[1] Contribution from the Zoological Laboratory of the University of Oklahoma.

[2] *Copeia*, 4: 266, 1941.

a fuller expression of these ideas see the following papers by the author.[3]

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CALENDAR REFORM AND THE NATIONAL ACADEMY OF SCIENCES

MANY persons think that our present calendar has certain defects which could easily be remedied. The chief ones are (1) that a particular day of the month occurs in successive years on a different day of the week, making necessary a wholly new calendar each year, and (2) that the length of the months is not uniform but varies from 28 to 31 days. These two defects make the arrangement of schedules for industry and education difficult and temporary only.

Defect (1) could be remedied in a very simple way. The solar year, as recognized in our present calendar, consists of 365 days, or in leap years of 366 days. Neither period is divisible exactly into 7-day weeks. Fifty-two 7-day weeks make 364 days. If the 365th day is not included in one of these 52 weeks, but is considered an *extra Saturday,* or simply a *Year day,* a holiday, the new year will begin on Sunday always. The 366th day of leap years can be used in a similar way as an *extra Saturday,* or *Leap year day,* a holiday in the middle of the year, without disturbing the occurrence of a particular day of the month always on the same day of the week.

Two different proposals for calendar reform which have been widely discussed in recent years remedy defect (1) in this same simple and sensible way. But they differ in the way they deal with defect (2).

A proposed 13-month calendar would have each month consist of exactly 4 weeks. An objection which has proved fatal to this proposal in popular esteem is that the year would not be divisible by months into quarters and the familiar twelve months would have to be abandoned.

A less radical proposal is known as the World Calendar of twelve months and four equal quarters. This retains the familiar month names but adjusts their lengths so as to make them as nearly equal as possible. Each quarter begins on Sunday and ends on Saturday. It contains 91 days. There are 30 days in each month except the first month of the quarter, which by reason of having a fifth (the initial) Sunday has 31 days. The number of week days is the same in every month, 26.

From a wish to ascertain the opinion of a body of eminent scientists upon the desirability and practicability of the proposed World Cadendar, an informal post-card questionnaire was recently sent to each member of the National Academy of Sciences. Replies were received from 168 members, more than half of the entire membership.

One question was worded, *"Do you consider the adoption of a revised World Calendar of 12 months and equal quarters, as outlined by the World Calendar Association, to be desirable?"* The answers were *"Yes,"* 128 (76 per cent.), *"No,"* 17 (10 per cent.), *"Undecided,"* 23 (14 per cent.).

Another question was worded, *"Would you consider it practicable for the United States to begin the use of such a calendar on January 1, 1945* [which will be a Sunday in our present calendar] *in collaboration with other governments?"*

The answers of the 128 who favor the World Calender were *"Yes,"* 74 (58 per cent.), *"No,"* unless the war ends soon enough, 54 (42 per cent.).

There can accordingly be no doubt about what would happen in calendar reform, if the scientists had their way.

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FISHERIES LITERATURE FOR CHINA

AN official of the Chinese Government with its capital now at Chungking has asked that there be secured for him whatever fisheries literature is available in order that some start may be made on the rehabilitation of Chinese fisheries after the war.

Such assistance will be a practical and direct way of showing our sympathy with the Chinese. It speaks volumes for their courage and confidence that such preparations should be under way.

He would be more than glad to receive any form of fisheries literature whether it deals with life history, systematics or technology which any reader of this notice may be able to spare for transmittal at such time as communications are re-established.

These should be sent to School of Fisheries, University of Washington, Seattle, Washington, and marked plainly as intended for Ti Chow, Chungking.

W. F. THOMPSON,
Director

SPECIAL CORRESPONDENCE

ANALYSIS OF POST-WAR PROBLEMS AND PROCEDURES

AFTER winning the first World War, the Allies lost the peace because of the inability of statesmen and public opinion to understand the dependence of national security on world order and the dependence of world order upon truly workable international relations. Assuming the defeat of Hitlerism, how may

[3] *Amer. Nat.,* 74: 322, 1940; *Amer. Midl. Nat.,* 24: 306–335, 1940; *Wasmann Collector,* 4: 6, 1940; *Turtox News,* 19: 10, 1941; *Great Basin Nat.,* 2: 109, 1941; and *Turtox News,* 20: 12, 1942.