lems, with observational studies in the social sciences. For the destruction of the religious faith of a large portion of the world's dominant and educated people by the approximations of science has left a spiritual void which is a basic cause for the catastrophic impact of diverse, materialistic, political systems on each other and on the unfortunate, but largely inarticulate, human victims.

In order to fill this void with something more tangible than Dirac's substance having negative energy and mass, it is proposed that a suitable body of specialists in all fields of knowledge prepare a list of the most pertinent facts of experience and observation. An example of a suitable fact would be that there are living organisms on this planet. The next step would be to request representatives of science and religion to present their understandings of these facts together with sufficient supporting evidence to permit an estimate of accuracy to be made. Finally, the facts plus the comparative understandings should be published. It is the writer's belief that such a comparison will demonstrate that there is room in the rational mind for religious faith, which might be the greatest service that science could render man in these times.

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The Effects of Allyl Isothiocyanate Compared With Ultraviolet Radiation

A comparative study of the effects of synthetic allyl isothiocyanate (mustard oil) and ultraviolet radiation upon the ciliated protozoan *Spirostomum ambiguum* has been conducted in our laboratory.

Eight to 10 sec of exposure to mustard oil caused striking effects. The same was true when the animal was exposed to ultraviolet for a period of 20 to 30 sec at a wave length of 2,537 A and a target distance of 5 cm. In the majority of cases the posterior end enlarged. Occasionally small swellings lighter in color than the rest appeared over the surface. These changes persisted 4 to 9 days and gradually disappeared.

Mustard oil and ultraviolet caused fragmentation of the macronucleus. So far no changes have been detected in the micronucleus as a result of either treatment. Details of this communication will be published.

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The Earliest Record (*ca.* 195 A.D.) of Fishing With the Hand[1]

Fishing with the hand is a primitive fishing method widespread throughout the world. On this fishing I am preparing a series of historical papers by continents and regions. It is undoubtedly the oldest means by which primitive man obtained his fish food. Its beginning cannot be dated, but fortunately, an approximate date can be set for the first recorded account.

[1] By fishing with the hand, just that is meant—the use of the human hand without any auxiliary help, unless specifically noted.

Various authorities (?) (without giving citations) allege that the classical writer, Aelian (fl. *ca.* 120 A.D.), in his great work, *De Natura Animalium*, describes hand-fishing in Macedonia. There is no English version of this work—not even in the Loeb Library. However, the American Museum library has an excellent Latin edition published at Zurich in 1556. I have made several searches through the chapter headings, watching for key words, *manus, piscator, Macedonia*, etc., but in vain. The account may, of course, be buried in the text, but careful scanning of this has been unavailing. Should such an account ever be found in Aelian, its date (*ca.* 120 A.D.) would eclipse that in the title of this article.

Fortunately, an obscure reference in Wm. Radcliffe's *Fishing from the earliest times* (2nd ed., 1926, p. 241) took me to the Greek poet, Oppian (of Cilicia), who flourished *ca.* 170–200 A.D. The Museum library has the English version of his poem, "Halieutica" (Oxford, 1722). Book IV of this work was translated by John Jones. In Book IV, lines 730–739, Oppian writes:

> The Diver hardened to the dreadful Toil
> With artless Force attacks the finny Spoil,
> Boldly he plunges from ethereal Day,
> Springs to the Deep, and treads the fluid Way;
> Firm as on Land along the vaulted Shores
> The secret Chambers of the Deep explores;
> Revisits safe the long-suspended Air,
> And grasps with loaded Hands a captive Pair.
> The *Sargo* thus, and tim'rous *Shade-fish* dies,
> Nor this his Fears secures, nor that his Size.

Further on, in lines 753–762, Oppian says:

> . . . The liquid Way
> The Swain descends, and singles out his Prey.
> Where the sleek Neck and taper Tail displays
> A naked Void, his cautious Hands he lays,
> With meeting Arms the crackling Captive bends,
> Snaps off his Chine, and all his Sinews rends.
> Knit in the close Embrace the rest abide,
> And fondly in their pointed Fence [of spines] confide.
> The Diver joyful of his finisht Toil,
> Remounts the Floods and bears the double Spoil.

Oppian next describes, with apt similes, how the *Shade-fish* seeks to hide from the diver, but in vain, and in lines 781–784, he thus concludes the account as follows:

> The Fish in careless ease supinely laid
> The grappling Fingers of the Swain invade.
> Up from the Deep he springs, and bids the Prey
> Recant his errors in aerial Day.

Reading these three excerpts from Oppian, one must conclude that diving and catching sea fishes with the hand was known and practiced by the ancients in classical times. But to fix the date of Oppian's account is very difficult. One authority gives his year as *ca.* 170–200 A.D. Perhaps it is better to say that he flourished in the last third of the Second Century A.D. Several of the authorities state that he died at the age of 30.

Taking all the facts into consideration, it seems fair to say that Oppian's "Halieutica" bears the date *ca.* 195 A.D. Certainly, it is the oldest account of fishing with the hand that has thus far come to light. The next oldest—from China—is dated *ca.* 1325 A.D.

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