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On Charles Atwood Kofoid (1865-1947): the good, the bad, and the ugly

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Abstract
Charles Atwood Kofoid was a scientist of considerable stature and a key figure in the development of protistology in the United States of America during first half of the 20th century. Today he is known mainly for his detailed taxonomic monographs on protists of the marine plankton, specifically dinoflagellates and tintinnid ciliates. Lesser known today is the wide range of Kofoid's work in protistology. Little known is his responsibility for one of the great mistakes of protistology: the existence of a protistan nervous system, the "neuromortorium". Largely unknown is Kofoid's enthusiastic involvement in the eugenics movement. Here, following a brief biography, I will provide a review of Kofoid's enduring contribution to protistology, "the good", then the story of the neuromotorium, "the bad", and finally an account of Kofoid's implication in the eugenics movement, "the ugly".

Keywords: History of protistology, dinoflagellates, tintinnid ciliates, plankton, neuromotorium, eugenics, racism

Introduction

The life of Charles Atwood Kofoid stretched over a period of remarkable changes in technologies, politics and sciences. He was born in 1865, the year that Pasteur patented 'pasteurization', just a few years after the appearance of Darwin's *Origin of the Species*. Kofoid died in 1947, the year India and Pakistan became independent nations, two years after the first use of the atomic bomb. Throughout most of his long life Kofoid was a very productive protozoologist. In the United States he was a scientist of considerable stature in his time as attested to by memberships in academies (i.e., Fellow, American Association for the Advancement of Science in 1899; Member, American Academy of Arts and Sciences in 1913; Member, National Academy of Sciences USA in 1922) and elections as President of scientific societies (American Microscopical Society in 1915, American Society of Zoologists in 1921, American Society of Parasitology

in 1928). His first paper on protists dates from 1896 (Kofoid, 1896) and his last was published posthumously in 1948 (Bush and Kofoid, 1948).

Given Kofoid's long life and career, it is perhaps not surprising that in it one can find good things, bad things and even some ugly things. However, bad and ugly things are, in general, often glossed over or simply omitted, as they are in the many existing biographies and obituaries of Kofoid (Dobbel 1947; Goldschmidt, 1951; Kirby, 1945, 1947; 1950; Noble, 1935). This is unfortunate as they are part of a history and can be the most interesting components. Here I will attempt to provide a comprehensive history of Kofoid, which includes 'the good, the bad, and the ugly'. First a brief biographical sketch of Kofoid will be provided. This will be followed by a review of his major lasting contributions to protozoology (i.e., 'the good). These largely concern Kofoid's work on planktonic protists. The review of 'the good' will be followed by an exposé of his major mistake in protozoology (i.e., 'the bad'), his alleged nervous system of protists "the neuromotorium". Finally, an account will be given of Kofoid's long, active, and remarkably persistent involvement in the eugenics movement in the United States, an activity not mentioned in any of the accounts of his life (i.e., 'the ugly'). In the interest of brevity, Kofoid's considerable role in the establishment of the Scripps Institution of Oceanography is neglected here, a full account of which appears in Raitt and Moulton (1967).

Biographical Sketch of Charles Atwood Kofoid

The following account is based largely on the biographical memoir authored by Goldschmidt (1951) and published by the National Academy of Sciences (USA). Charles Atwood Kofoid was born on October 11th, 1865 in Granville, Illinois. His father, Nelson Kofoid, a cabinet maker, had immigrated from Denmark a few years earlier and married Janette Blake of a well-established Massachusetts family. Although little is known of Kofoid's early life, it appears that his family was of modest means. He began his college education at 21 years old and worked his way through Oberlin College waiting on tables and sawing wood. He graduated in 1890, worked as teaching assistant for year at Oberlin, and then went to Harvard for graduate work. His thesis work was on the embryology of the slug *Limax* (Kofoid, 1894, 1895). After finishing his thesis, Kofoid worked briefly at the University of Michigan. Although no documentary evidence exists, it is said that it was at the University of Michigan where Kofoid was introduced to the study of protists by Herbert Spencer Jennings. At that time, Jennings was at the University of Michigan and he would soon become an expert on the sensory behaviour of protists (e.g., Jennings, 1897). In 1895 Kofoid moved to back to his home state of Illinois, as he was named Director of the Illinois Biological Station. There he began his studies of both plankton and protists through extensive investigations of the plankton of the Illinois River. Kofoid worked on methods and instruments for collecting planktonic protists (Kofoid, 1897a,b) and he would eventually publish voluminous papers on the river (Kofoid, 1903) and the

river plankton (Kofoid, 1905a). Figure one shows Charles Atwood Kofoid through the years, beginning with his explorations of the Illinois River.

Fig. 1. In 1896 Kofoid, as Director of the Illinois Biological Station, conducted extensive studies of the plankton of the Illinois River and published his first paper on a protist (Kofoid, 1896). By 1904, Kofoid was an Associate Professor at the University of California and had begun to work on marine planktonic protists at the Marine Biological Station of San Diego (Kofoid, 1904). In the image of the staff and students in 1904, among those shown standing are both Kofoid (2nd from the right) and the future founder of Scripps, William E. Ritter (3rd from the left). By 1915, Kofoid had occupied the Chair of the Department of Zoology for several years, a position he retained until his retirement in 1936. The 1942 group photo with Professor Emeritus Kofoid in the center of the bottom row was taken to celebrate the 75th anniversary of teaching of natural history at the University.

While at Harvard, Kofoid had known William Ritter who later joined the faculty of the University of California in Berkeley. In 1891 Ritter assumed the Chair of the recently established Department of Zoology and in 1900 enticed Kofoid to join the faculty of the University of California where he would remain for the rest of his career. Once in California, although hired to teach embryology, Kofoid turned his attention to marine plankton. Ritter had concentrated his efforts as Chair on expanding university coursework and fieldwork in marine zoology. Ritter settled on establishing a field station near San Diego, The Marine Laboratory of Coronada. It was there that Kofoid began his studies of the protists of the marine plankton. In an article on the new 'Marine Laboratory', Kofoid clearly stated his subject of investigations to be "pelagic protozoa" (Kofoid,1904).

An important event in Kofoid's career was his participation in Alexander Agassiz's last expedition with the *Albatross* to the Tropical Eastern Pacific from October 1904 to March 1905 (Fig. 2.). Kofoid was "given charge of the collection of radiolarians and diatoms and of other minute pelagic organisms" by Agassiz (Agassiz, 1905). It was only on his return from the expedition that Kofoid began to publish on protists of the marine plankton from collections made in San Diego and the material collected formed during the Agassiz Expedition. The Expedition collections formed the basis of the now classic monographic works of Kofoid on dinoflagellates (Kofoid, 1907; Kofoid and Adamson, 1933; Kofoid and Michener, 1911; Kofoid and Skogsberg, 1928) and tintinnid ciliates (Kofoid and Campbell, 1929, 1939). Interestingly, despite Agassiz's charge, Kofoid never published on the radiolaria or diatoms of the Expedition.

Fig. 2. Alexander Aggasiz (center of image, wearing a coat) and Charles Kofoid (far right of image with his hand on his head) aboard the *Albatrosss* watching the emptying of a dredge on deck.

Kofoid was named Chair of the Department of Zoology in 1910 when William Ritter moved permanently to San Diego to head the Marine Biological Station of San Diego, which would become the Scripps Institution of Oceanography. Under Kofoid's dominance, the Department of Zoology was facetiously called a "school of protozoology" (Eakins, 1988). His tenure as Chair was apparently marked by some conflicts. According to Goldschmidt (1951) "*He also had the old-fashioned, actually European, idea that the Chairman is the Department and therefore considered all funds and assistance as belonging only to his work, which caused much unhappiness among the other professors*". Just a few years after assuming

chairmanship, roughly 1915, and until the end of his scientific career, Kofoid's major interest shifted from dinoflagellates and tintinnids to parasitic protists, primarily amoeba infecting humans, and endosymbiotic protists, both flagellate and ciliates, found in a large variety of animals.

After his retirement in 1936, and until shortly before his death, Kofoid is said to have devoted himself to his pastime of book collecting. When he passed away in 1947 he bequeathed his very considerable personal library, variously estimated to have been 60,000 to 100,000 volumes (Dolan, 2021a), to the University of California. He bequeathed half of the remainder of his estate to the Pacific School of Religion and the other half to the University of California with the stipulation that it be used to finance a graduate scholarship fund, the "Charles A. Kofoid Eugenics Fellowship" specifically to favor married graduate students.

The Good

Kofoid's contributions to protistology were numerous. The biographical memoir of Goldschmidt included a complete bibliography of Kofoid's publications, exclusive of dozens of book reviews. Based on the titles, Kofoid authored 150 works on protistology, the overwhelming majority as first author and most as single author. He published a large portion (55 out of 150 titles) in the *University of California Publications in Zoology* while he was the editor, a practice today frowned upon but not uncommon at the time. The topics he published on substantially (5 or more publications) can be parsed into 9 main subjects, given in Table 1 (full references given in the supplementary data file). While Kofoid published on several of the topics over a long time span, rough chronological shifts in his research interests can be discerned.

Table 1. Summary data on the protistological publications of Charles Atwood Kofoid. The topics listed, in order of time span, are the subjects on which he published 5 or more works. The topic 'Plankton Methods & Devices ' is included as the works concerned sampling for planktonic protists. The supplementary file contains a complete bibliography of Kofoid's protist works. Citations from Google Scholar on Nov. 15, 2021.

Topic	**# Works**	**# Citations**	**Time Span**
Freshwater Plankton	7	314	1896-1923
Plankton Methods & Devices	8	48	1897-1912
Free-living Flagellates	5	41	1898-1905
Endosymbiotic Ciliates	9	445	1903-1948
Tintinnid Ciliates (marine plankton)	7	543	1905-1939
Dinoflagellates (marine plankton)	35	1710	1906-1937
Amoeba	39	231	1915-1932
Endosymbiotic Flagellates	24	294	1915-1941
Trypanosomes	8	159	1916-1937

Early in his career, while in Illinois and during his first years in Berkeley, Kofoid's publications were on freshwater plankton and methods of collecting planktonic protists. He was the first to criticize the use of course nets, stating that small and delicate organisms were under-sampled (Kofoid,1897a) and published on methods and equipment for sampling (Kofoid, 1897b, 1898). His early works were mainly on the organisms of the Illinois River (Kofoid, 1903, 1905a, 1908) some describing some new flagellates (e.g. Kofoid, 1900a,b). However he also reported on cave fauna (Kofoid, 1900c). Kofoid's works on freshwater plankton have been cited many times (Table 1), with most of the citations referring to his work on the plankton of the Illinois River.

As mentioned above, Kofoid began publishing on protists of the marine plankton only after his return to Berkeley from the *Albatross Expedition* of 1903-1904. His studies were based on work done in San Diego as well as the material he had collected during the *Albatross Expedition*. Kofoid's first publication on protists of the marine plankton was on tintinnid ciliates of the San Diego Region (Kofoid, 1905b) and his second (Kofoid, 1905c) was on *Craspodotella*, an exceedingly rare and odd dinoflagellate (e.g. Gomez, 2007) that he found in *Albatross* samples and in San Diego. Kofoid published extensively on dinoflagellates between 1906 and 1912, authoring 25 publications. Citations to these early papers, and mostly to his later monographic works on dinoflagellates (Kofoid and Adamson, 1933; Kofoid and Skogsberg, 1929; Kofoid and Swezy, 1921), make dinoflagellates the most cited of Kofoid's research topics (Table 1.). Kofoid's major works on tintininid ciliates, taxonomic monographs still widely cited today, were in collaboration with Arthur S. Campbell (Kofoid and Campbell, 1929, 1939). They are recognized as the most famous works on tintinnid ciliates

(Agatha et al., 2013). Today it is unclear if the monographs were largely the work of the first or perhaps the second author (Dolan, 2021b).

After about 1915, Kofoid's main research interest shifted to endosymbiotic and parasitic protists. His first works on parasitic or endosymbiotic flagellates began appearing in 1915, and the first of his many papers on parasitic amoeba in 1919. Reprints requested from Kofoid were sent with a request for "papers on parasitic protozoa desired in exchange" (Fig. 3). In terms of numbers of publications, his work on flagellates and amoeba was impressive, totaling 63 works. However, they appear to be relatively poorly cited. Indeed, Kofoid's work on parasitic protists was criticized at the time by some (Dobell, 1928, 1938, 1939; Freemann, 1929; Gunn, 1922) and in later years has even been ridiculed (Kean 1988). Kofoid's work on endosymbiotic ciliates concerned mainly rumen ciliates and date from the 1930's. In contrast to his work on parasitic flagellates and amoeba, his rumen ciliate work was not subjected to criticism and continues to be cited today.

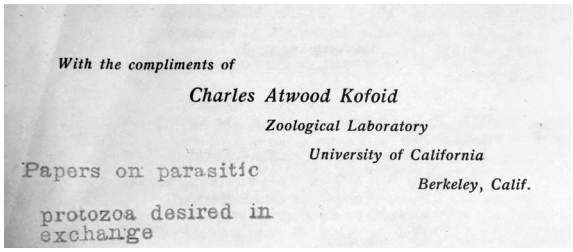

Fig. 3. The label, asking for papers on parasitic protozoa, pasted in the reprints Kofoid distributed. Image from a reprint of a 1908 article on the dinoflagellate *Ceratium* in the author's reprint collection.

Reviewing Kofoid's many contributions to protistology, it is fairly clear that his works on dinoflagellates stand out among the diverse subjects he treated. The citations to his dinoflagellate publications far outnumbers those to Kofoid's other research topics, by a factor of at least 3 (Table 1). In line with the citation data, Taylor (1999) described Kofoid's work with dinoflagellates as likely to be the most remembered of his contributions. Taylor pointed out that his important works were not only the lavishly illustrated taxonomic monographs (e.g. Fig. 4) but also, very importantly, those introducing the use of tabulation to studies of dinoflagellate morphology and phylogeny, described as still standard today, (Taylor, 1999). With regard to the works on tintinnid ciliates, the second most cited publications, the classification system introduced by Kofoid and Campbell (1929, 1939), although periodically criticized, have remained more or less intact and in use by plankton ecologists and protistologists (Agatha et al., 2013).

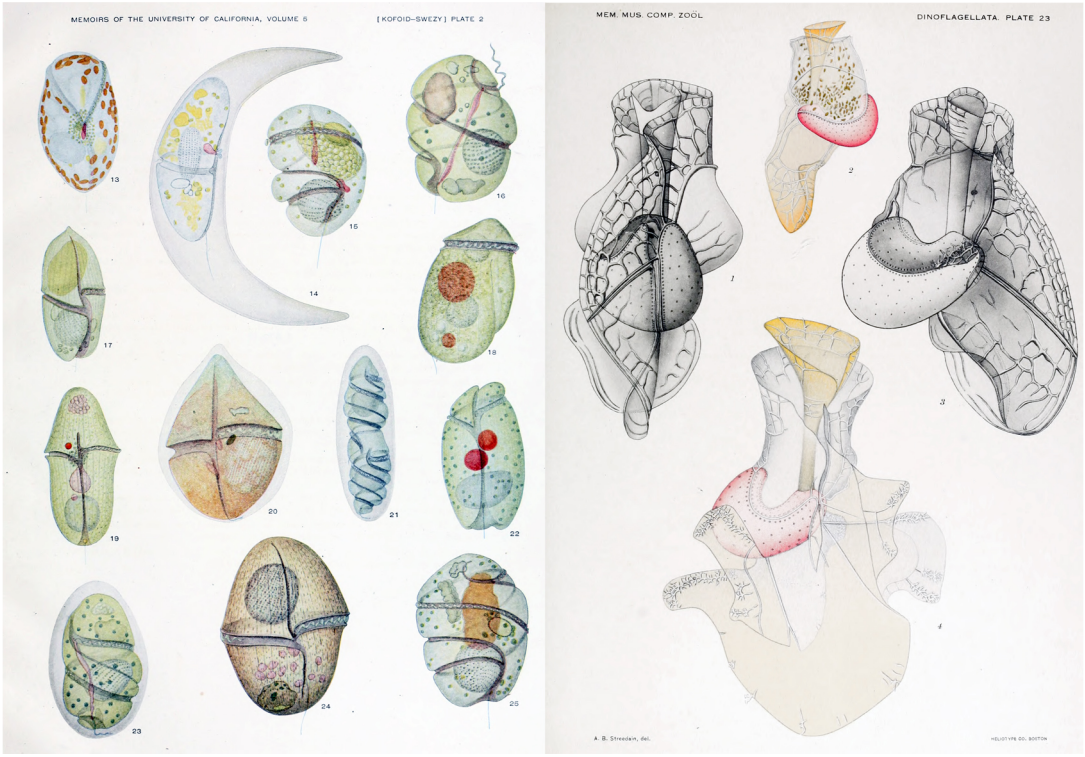

Fig. 4. Examples of the striking illustrations characterising Kofoid's dinoflagellate monographs. Plate 2 from Kofoid and Swezy, 1921 (left) showing species of *Amphidinium, Gymnodinium* and *Cochlodinium* and plate 25 from Kofoid and Skogsberg, 1929 showing species of *Histioneis* (right).

The Bad

While some of Kofoid's work on parasitic protists was criticized, as alluded to above, I believe Kofoid's most spectacular mistake was promoting the notion that protists possessed a proto-nervous system, composed of sensory fibers joined in a proto-brain of sorts, the "neuromotorium". Eventually, Kofoid's neuromotorium would join Ehrenberg's "polygastrica" (multiple stomachs in many protists), as mistakes made by important protistologists to be kindly over-looked (e.g., Corliss, 1978). However, unlike Ehrenberg, Kofoid involved a very long line of his graduate students in his mistake. In chronological order these were: Sharp (1914), Swezy (1915), Yocum (1918), McCulloch (1919), Taylor (1920), Rees (1921, 1922), McDonald (1922), (Hall 1923) ,Campbell (1926, 1927), Pickard (1927), Brown (1930), Hammond (Hammond and Kofoid 1937). Perhaps because of Kofoid's stature in the scientific community, the existence of a neuromotorium was accepted quickly (e.g., Ashworth 1923), widely (e.g., Kudo 1939; Scheter 1941), and enduringly (Fauré-Fremiet 1961). Goldschmidt named the 'discovery' of the neuromotorium as Kofoid's greatest accomplishment (Goldschmidt 1951). The neuromotorium was not definitively put to rest until

transmission electron microscopy studies showed the alleged sensory fibers to be structural and the absence of a point of convergence or a neuromotor organelle (Pitelka 1970).

The neuromotorium was first described by Sharp (1914) in a rumen ciliate. Interestingly, he referred to ciliates as "animals". Sharp described some structures revealed by staining with Mallory's Stain, used to color connective tissue, in the ciliate *Diplodinium ecaudatum*. Sharp, in the tradition of Ehrenberg, also described a caecum, a rectum and an anus in the ciliate. Soon after the appearance of his student's work, Kofoid himself described a neuromotorium in the flagellate *Giardia microti* from the mouse in preparations stained with iron haematoxylin (Kofoid and Christiansen, 1915). Oddly enough the neuromotorium is not pointed out in the illustration in the paper, only a text description appeared.

Next, 'neuromotoria' were described in flagellates found in amphibians by Swezy, again in preparations stained with iron haematoxylin (Swezy, 1915), and expanding the protist taxa with a neuromotorium, she described it in other flagellates and an amoeba (Swezy, 1916). Apparent validation of some sort of role of the neuromotorium in coordinating ciliary movement was provided by Taylor (1920) using microdissection of the ciliate *Euplotes.* He reported that cutting the fibers of the neuromotorium resulted in asynchronous beating of the cirri in *Euplotes*. Perhaps the most elaborate and complex neuromotorium was the last described by Kofoid himself in the vorticellid ciliate *Opisthonecta henneguyi,* shown in Fig. 5 from Kofoid and Rosenberg (1940).

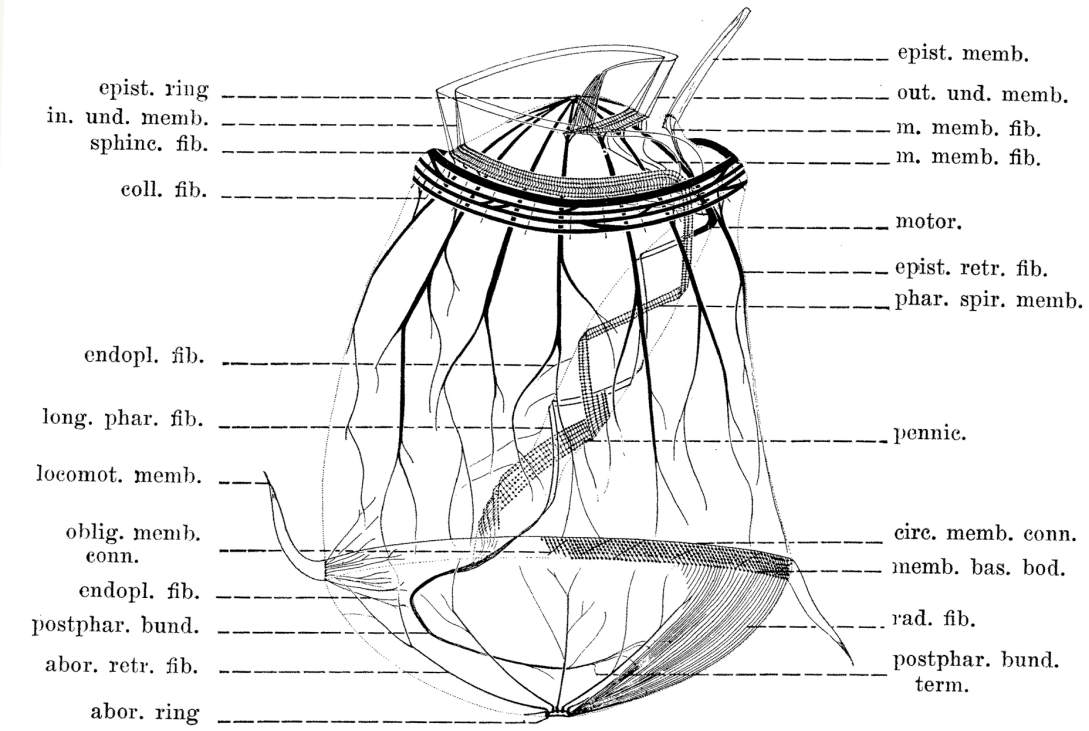

FIG. *B.* Diagram of the neuromotor system of *Opisthonecta henneguyi*. The outlines were drawn from a specimen fixed in osmic acid. The radial fibrils and the basal bodies of the membranelles are omitted on one side of the organism for the sake of clarity. × 1050. Abbreviations: *abor. retr. fib.*, aboral retractor fibril; *abor. ring*, aboral ring; *circ. memb. conn.*, circular membranelle connective; *coll. fib.*, collarette fibril; *endopl. fib.*, endoplasmic fibrils; *epist. memb.*, epistomal membrane; *epist. retr. fib.*, epistome-retractor fibril; *epist. ring.*, epistomal ring; *in. und. memb.*, inner undulating membrane; *locomot. memb.*, locomotor membranelles; *long. phar. fib.*, longitudinal pharyngeal fibril; *memb. bas. bod.*, membranelle basal bodies; *m. memb. fibs.*, moto-membrano fibrils; *motor.*, motorium; *obliq. memb. conn.*, oblique membranelle connective; *out. und. memb.*, outer undulating membrane; *pennic.*, penniculus; *phar. spir. memb.*, pharyngeal spiral membrane; *postphar. bund.*, postpharyngeal bundle; *postphar. bund. term.*, postpharyngeal bundle terminal; *rad. fib.*, radial fibril; *sphinc. fib.*, sphincter fibril.

Fig. 5. The depicition of the neuromotorium of the vorticellid ciliate *Opisthonecta henneguyi* from Kofoid and Rosenberg 1940.

Early on some researchers reported that they were unable to find a neuromotorium (e.g. ten Kate, 1926, 1928; Young, 1922), and others suggested it might be a fixation artifact (Alverdes, 1923). However, it was not until years later that formal doubts as to the very existence of a neuromotorium began to appear. Parker (1929a,b) was the first to dispute a sensory or controlling role. He pointed out that that in 1902 Jennings and Jamieson had shown that pieces of ciliates continue to show synchronous ciliary movement (Jennings and Jamieson, 1902), in sharp contrast to Taylor's report on *Euplotes*,. It is difficult to imagine that Kofoid was unaware of Jennings and Jamieson's study especially if it was Jennings who introduced Kofoid to protistology. In 1929, Wenrich was the first join Parker's view that fibers apparent with staining were not involved in

coordinating movement of cilia (Wenrich, 1929). In 1930 Rees apologetically reported that the structures first described as constituting a neuromortorium by Sharp in *Diplodinium* (Sharp, 1914) were most likely artifacts resulting from improper staining (Rees, 1930, 1931) and no neuromotorium can be found in *Diplodinium*. Nonetheless, by 1930, the number of protist species described as possessing a neuromotorium far outnumbered those reported as lacking such a system, mostly but not entirely, due to work from Kofoid's lab (fig. 6).

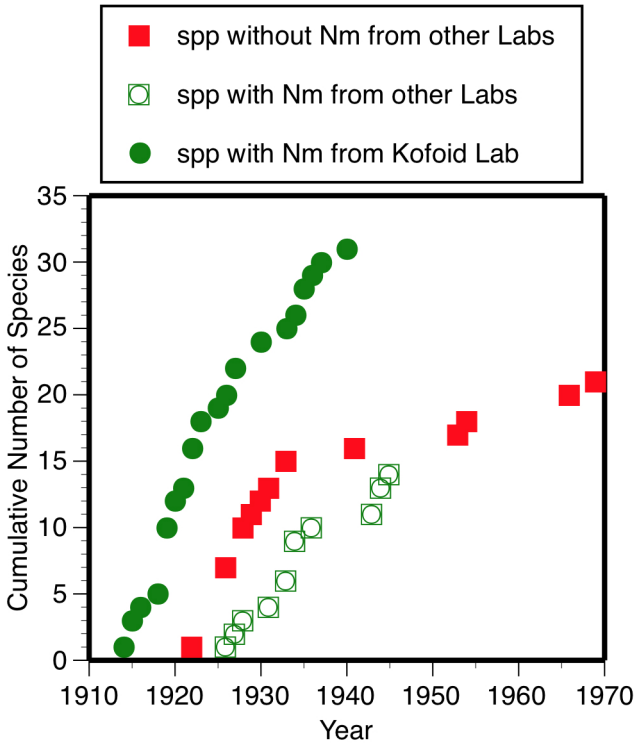

Fig. 6. The cumulative number of species with time described as possessing a neuromotorium by worker's in Kofoid's laboratory (spp with Nm from Kofoid Lab), by workers in other laboratories (spp with Nm from other Labs), and reports of species without a neuromotorium which were all from laboratories other than Kofoid's (spp without Nm from other Labs). Note that the majority of reports describing a neuromotorium came from Kofoid's laboratory. References are given in the supplementary file.

Descriptions of species with a neuromotorium ceased entirely after 1945. Investigations continued though and showed for example, that microdissection of 'neuromotor fibers' in *Euplotes* actually did not result in asynchronous ciliary movements (Naitoh and Eckert, 1969; Okajima and Kinosita; 1966). Thus by the end of 1960's the fundamental studies of the existence of a neuromotorium (i.e., the structures described by Sharp in 1914) and a role in controlling ciliary coordination (i.e., reported by Taylor in 1920) had been discredited. The final nail in the coffin, so to speak, were transmission electron microscope studies of ciliates showing that

"neuromotor fibers" were structural and no central organelle connected them (Pitelka, 1970). By 1973, the neuromotor apparatus was simply described as "now discredited" (e.g. Frankel, 1973). The longevity of the neuromotorium (over 50 years!) in the face of early on doubt and counter-evidence was remarkable. The fact that it could be dismissed as discredited only after Kofoid's death suggests that it was probably Kofoid himself who was largely responsible for the long life of the neuromotorium.

The Ugly

The eugenics movement in the United States can be dated to have begun in an organized fashion in 1910 with the creation of the Eugenic Record Office. It can be said to have ended in 1945 with the end of World War 2. The end of the war brought the realization that the horror of Hitler's racial policies were inspired by American eugenic philosophies and policies such as laws against racially mixed marriages, discriminatory immigration polices, and forced sterilizations (e.g. Kühl, 1994). Thus, the course of eugenics in the United States roughly corresponded with Kofoid's scientific career. While there were vocal opponents to the 'scientific racism' of eugenics (e.g. Franz Boas), it was very much mainstream science in its time (Farber, 2008). It is perhaps then not surprising to learn that Kofoid was a proponent of eugenics. Among protistologists, he was not alone as Herbert Spencer Jennings was an important figure in the early years of eugenics in America (e.g. Barkan, 1991). Notably, the major account of Jenning's life (and contributions to protistology) includes his involvement with eugenics (e.g., Sonneborn 1975). In contrast, Kofoid's implications in eugenics are absent from all accounts of his life (Corliss, 1978; Dobbel, 1947; Goldschmidt, 1951; Kirby, 1945, 1947; 1950; Noble, 1935). I began looking into Kofoid's possible role in eugenics only after reading an oddly-titled 1914 article listed in Goldschmidt's bibliography of Kofoid works - "The probable effect of the European War Upon the Human Stock" (Kofoid 1914).

1914 was fairly early on in the eugenics movement in the United States. Kofoid's article in a popular magazine, *California Outlook*, identified him as an early adherent to eugenics. Kofoid's view was that the long-term effect of the First World War would be humanity's loss of valuable European stock. The extract below summarizes the tenor of Kofoid's article, aimed at the general public.

> *Whenever it* (war) *has given to a superior race a wider territory, more food and room, more stimulus to endeavor, without at the same time depleting too much the racial stock, war has undoubtedly resulted in some advance in civilization of the race by enlarging its bounds and diversifying its character. Examples of this are to be seen in our own day in the extension of the European races in new*

settlements in western continents, in Africa and Australia, and their slow but inevitable extinction of some of the inferior races with which they come in contact. War or conquest where the combatants are unequal in grade of civilization and where the tide of battle turns in favor of the superior race, conforms in both process and result to struggle or existence and survival of the fittest, which seems to have been in operation in the world of life and to have brought about its progressive evolution.

The present war is no uneven contest but a death grapple of civilized giants.

The literature on eugenics revealed that both H. S. Jennings and Kofoid were named members of the Advisory Council of the new Eugenics Society of the United States of America in 1923 (Anon., 1923). Actual classes in eugenics were rare, offered in only a few universities in the United States, but among them was the University of California Berkeley where Kofoid taught a graduate class in eugenics in 1929 (Kohlman 2018). No traces could be found of what exactly Kofoid taught in his eugenics course. However, by the late 1920's advances in genetics and in developmental biology had greatly undermined the scientific validity of eugenic views (e.g., Jennings, 1930). Jennings himself formally distanced himself from the Eugenics Society, withdrawing from involvement in organization of the 1932 Third International Congress (Kühl, 1994). He actually became a vocal critic of eugenic policies (Kevles 1985, Levine 2017). Meanwhile, Kofoid remained an "active member" of the Eugenics Society of America (Perkins 1934).

Kofoid's devotion to eugenics led him to bequeath half of his life savings, to the University of California as an endowment to fund a "Charles A. Kofoid Eugenics Fellowship". The fellowship was not to encourage the study of eugenics, but rather to increase the birth rate among graduate students. According William Dennes (Dennes 1970), Dean of Graduate Studies at the University of California (1948 to 1955), Kofoid's motivation was very clear but the mechanics of the fellowship proved complicated. According to Dennes, Kofoid had told him that he was concerned that the less bright and less educated part of the population was growing while intellectuals delayed marriage and thus produced fewer children. Kofoid consequently funded a graduate fellowship program specifically for students who were married or who would promise to marry. According to Dennes, the latter category proved problematic, so the solution was to restrict the fellowship to graduate students who were already married. The Charles A. Kofoid Eugenics Fellowship, existed as such until at least 2009. Among endowed fellowships awarded by the graduate division at the University of California Berkeley, "The Charles A. Kofoid Eugenics Fellowship Fund" was listed in the spring 2009 issue of *The Graduate*, a magazine of the university targeting graduate students (Anon., 2009).

Oddly enough, the present status of the Eugenics Fellowship is unclear. Repeated inquiries to various offices of the University of California Berkeley (endowed funds, graduate division, fellowship office) yielded no replies to direct questions, only re-direction to other offices, or no reply. Simply put, university officials refused to comment on the present status of the Charles A. Kofoid Eugenics Fellowship or the associated endowment fund. Remarkably, the Charles A. Kofoid Eugenics Fellowship had a longer lifespan the neuromotorium. Clearly labeled 'eugenics', the fellowship lasted at least 61 years, from 1948 to at least 2009, despite the fact that after the horrors of the Holocaust were exposed in 1945, the word 'eugenics' became a dirty word in the United States (Kevles 1985), and almost everywhere, eugenic organizations were renamed without the term (Levine, 2017). It is surprising then that Kofoid, through his endowment, kept the term 'eugenics' in common use at the University of California Berkeley, famous for its liberal politics, well into the 21st century.

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