Well said: a selection of quotations

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A light-hearted look at scientific, ecological and botanical DOGMA (GODAM it, let's turn that around: this is a serious compilation of botanical, ecological and scientific wisdom).

Some of these quotations were included, as Tailpieces, in my check-list "Treés, shrubs and lianes of New Zealand" (1980). Since then I have intermittently collected what seemed to me to be interesting, pithy, amusing or historically significant pieces of writing; a selection of them is presented here.

The idea came from a book called "The Harvest of a Quiet Eye: A Selection of Scientific Quotations by Alan L MacKay", edited by Maurice Ebison and published in 1977 by The Institute of Physics. In that book the quotations were arranged alphabetically by the name of the author. In the present selection I have chosen to keep the reader guessing who wrote what; reference to the source of a quotation may be found by using the superscript placed at the end of the quotation. I have placed the quotations in some sort of order – an order that shows, I hope, that all human knowledge forms a continuum, even though only a very narrow range of topics has been covered here. My selection is clearly biased – how could it be otherwise? – but I have tried to counteract the bias here and there by including a few contradictory quotations, eg under *species* and *species: individuals or classes?*

It is perhaps invidious to pick out from such a galaxy of writers listed in the references, those with special talents for writing 'uncluttered' prose, but I cannot pass without mentioning Paul Colinvaux, Stephen J Gould, and Aldo Leopold. All three are masters of entertaining writing, on science, natural history and conservation. For an enlightened discussion of the philosophical problems involved in 'man's responsibility for nature' J Passmore and D A Ratcliffe cannot be too highly recommended.

Join me then, on a vicarious journey of discovery through the writings of many people from many parts of the world (Britain, France, USA, Canada, Australia, New Zealand, and elsewhere).

It is appropriate that we begin our journey with a botanical society *(Bot Soc'ers).* We are joined by the *summer-greenies,* to learn some field *'Bottinney'* before travelling into the *wilderness.* After a brief, but shocking look at ourselves, the *human species,* we discover the *land ethic* and *nature conservation.* We marvel at the *evolution* that has taken place on planet Earth since its birth. There's a great storm *punctuated* with a *flash* and *rattling* thunder. *'The Blind Watchmaker'* is nowhere to be seen but we find an *ecological niche,* do some *'honest work',* and find out how to avoid *competition.* We nearly miss seeing a *taxonomist* amongst the great horde of *species* that are not *specious.* The undergrowth of *subspecies* and *varieties* obscures the route and we wonder whether a *Pointer* might save us. *'Individuals* to the left, *classes* to the right' a signpost says; we, *Homo sapiens* no less, have no idea which way to go. A good sneeze *(A-teschew)* relieves the tension and a Cock on a weather-vane crows 'Come on! *No growsing and brazing in godzone!'* Before us is a dazzling *succession* of *vegetation* in an enchanted *landscape* – and that's the *whole truth and everything but the truth.* We come upon a *scientific paper* trail, but it leads only to another enigmatic signpost: *'Warily I say unto you – infidels* will loose their *z's.'* We do not *perish.* However, after learning about *science* and *method*

there's a great *buzz* in our ears. We catch a glimpse of some *Sacred Cows* as we look back *now and then,* but we press on into the scintillating world of *politics. Is there hope?* 'Yos' oll of os song: 'Wo sholl not follow on tho footstops of tho *No'ondorthols,* of tho Dodo, of tho Mo'o, of tho Horpogornos, of tho Mommoth, ond oll tho rost of tho oxtonct onomols'.

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Bot Soc'ers: a 'curious' breed

"As long as botanists have been numerous enough in one place to meet for an occasional gathering there have been botanical societies. Some believe they discern one even as early as the 1620s. . ." It is not at all easy to decide precisely when in 1836 the Botanical Society of London should be regarded as having been founded. . . . For women to be admitted to learned societies as members was almost unheard-of at this period but the founders of the Society were determined that it should not be discriminatory and to allow in women was only carrying this stance to a logical extreme. . . (The Council) was a curious and diverse set of people. . . Early (in the summer of 1838) a 'First Excursion' was announced. . ." [1]

Summer-greenies

". . . the term botanophil may be borrowed to describe a person who, without being a botanist, is interested in plants . . . While a botanophil searches for plants, a botanist may not have the time to do so, or even the interest . . . The botanophil is so much a plant-seeker that in winter . . . he usually hibernates. While the botanist is like an evergreen, working throughout the year, the botanophil is like one of those perennials that die down . . . in autumn . . . A botanophil once confessed to me that in winter he could not remember the botanical names." [2]

A delight in plants, above all when their flowers are out . . . seems to us the most natural – and most innocent – and inevitable of emotions. In earlier centuries delight was an ingredient not always present by any means . . ." [3]

Bottinney

"When he has learnt that bottinney means a knowledge of plants, he goes and know'em. That's our system, Nickleby; what do you think of it?" (Nicholas Nickleby)

"To recognise a plant properly, one must first see it growing. Dried plant collections are useful as reminders of those one already knows but they are of little use in learning to know those one has not seen before." [4]

In the field

"But in looking back upon these years of wandering, when all my senses were on the alert, and my thews and sinews were strung to stand the strain of the longest day's tramp – when the book of nature was no more a sealed book for me, and the trees, plants, and birds became my familiar friends – they were undoubtedly the happiest years of my life." [5]

". . . I found the explorations throughout the volcanoes some of my most memorable forest experiences – the challenge of the research, . . .the awesome beauty of the mountains revealed by virtually every turn . . . and the pleasure of making a 'home' with only a tent . . ." [6]

Wilderness

"There are some who can live without wild things, and some who cannot. Like wind and sunsets, wild things were taken for granted until progress began to do away with them. . . Wilderness is the raw material out of which man has hammered the artifact called civilization." [7]

"I went to the woods because I wished to live deliberately, to front only the essential facts of life, and see if I could not learn what it had to teach, and not, when I came to die, discover that I had not lived." [8]

The human species

". . . man is unique in new and very special ways . . . man is responsible to himself and for himself. ('Himself' here means the whole human species, not only the individual and certainly not just those of a certain . . . color or cast of features) . . . he can do something to influence his own biological destiny." [9]

"No civilization has ever recovered after ruining its environment. . . If we esteem what we have we must somehow defuse both the nuclear bomb and the population bomb. . . Predation and disease are the commonest controllers of population in other species. Human beings have no predators now, and disease has almost been conquered. Death is the commonest controlling event for other species; for death, we human beings can substitute non-birth." [10]

"Selfishness, aggression, territorialism and the urge to fecundity are tools forged on the anvil of natural selection, and have made *Homo sapiens* what he is. But does he need them any longer?" [11]

"Man is conquering the diseases that once kept his population in check. . . The destruction of the earth lies at his whim and cunning, yet he does not realize, does not feel, that he is not separate from but one with plants and animals, rock and water." [12]

"One of the penalties of an ecological education is that one lives alone in a world of wounds. . ." [7]

"Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all." [13]

"If the world is one great commons . . . then we are lost. . . In the absence of breeding controls, a policy of 'one mouth, one meal' ultimately produces one totally miserable world." [14]

"If we ask, indeed, what human beings add to the world by their prescence in it, there is, I should say, only one possible reply: civilsation. Were it not for his ability to civilise, man would be no more than a predator among the rest, more powerful, more aggressive, more violent, more skilful in capturing his prey but in no other respects superior, and in many respects inferior, to the prey he hunts. . . Through their struggles with nature men have discovered their potentialities and developed those forms of enterprise which constitute their civilisation." [15]

The land ethic and nature conservation

". . . a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it." [7]

"Man's chief end is to cherish his home, the earth, that he may enjoy its bounty for ever." [16]

"Nature conservation . . . is seen as an activity conducive to civilised living, through its ability to give an abiding sense of purpose, and harmony of relationships, both with environment and other people." [11]

"Only if men can first learn to look sensuously at the world will they learn to care for it." [15]

". . . diversity is endangered as never before in its history. Advocates of perpetual economic growth treat living species as expendable. As a result, an extinction crisis of unprecedented magnitude is under way." [17]

Evolution and speciation

"There is grandeur in this view of life, with its several powers, having been originally breathed into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved."[18]

"There is really nothing else so odd about life as its variety."[19]

"Ironically, although Darwin called his great book the *Origin of Species,* . . . (he) said rather little about speciation. . ."[20]

"Mayr put speciation right back at the center of evolutionary thought, where it so clearly belongs."[20]

A rattling good theory of punctuated evolution, in a flash

". . . the idea kept rattling about in the recesses of my mind . . . I realised in a kind of flash that two fundamental world views were at stake: either evolutionary change accumulates primarily in events of *branching* speciation, . . . or evolution is largely the story of more gradual change *within* phyletic lineages."[20]

Where was "The Blind Watchmaker"?[21]

"Evolution in hidden forests:. . . The molecular clock was clearly ticking in the angiosperms, but was it keeping the right time?"[22]

The ecological niche

"Every species has its niche, its place in the grand scheme of things. . .the ecologist's 'niche' is more than just a physical place. . .(it) is an animal's or a plant's profession."[19]

". . .the masses of different species press against one another, like soap-bubbles, crowding and jostling, as one species acquires. . .some advantage over another."[23]

"Honest Work"

"Likening an animal's niche to a human profession makes (this) idea of limits to number very clear. Let us take the profession of professing. There can only be as many professors in any city as there are teaching and scholarship jobs for professors to do. If the local university turns out more research scholars than there are professing jobs, then some of these hopeful young people will not be

able to accept the scholar's tenure, however *cum laude* their degrees. They will have to emigrate, or take to honest work to make a living."[19]

Avoiding competition

"Each unique species, with its unique shape, thus has a unique niche, making the 'one species: one niche' idea easy to accept. But, more than just being unique, species could now be seen as devices to avoid competition."[24]

Taxonomy and taxonomists

"Might it not be more economical to employ a few more good taxonomists? This ought to be possible out of a world population of 3×10^9 (in 1970)."[25]

". . . all methods bearing on taxonomy should be exploited and co-ordinated at every opportunity."[26]

"With increasing knowledge the chromosomes will further reflect the manifold ways in which evolution has proceeded and will thus become an increasingly refined tool, among the many available to the discriminating taxonomist."[27]

"Every new polyploid begins as the smallest of all populations, a unique individual. And it is cut off from its parental diploid stock, often forever. It is therefore at once a new species."[28]

Species

"We shall have to treat species as . . . merely artificial combinations made for convenience."[29]

"Common sense dictates that the world of familiar, macroscopic organisms presents itself to us in 'packages' called species."[30]

"The entity designated by the term 'species' would, at first sight, seem obvious, simple, and easily defined. But this is not the case. There is probably no other concept in biology that has remained so consistently controversial as the species concept. (The) ". . . naming of kinds is made possible because the diversity of nature is not continuous but consists of discrete entities, separated from each other by discontinuities."[31]

". . . there is not a single kind of species but there are several kinds. . . As a category of classification, species was and is being applied to all organisms, and this has led to futile search for universal properties of all species."[32]

"The human mind strives always for generalisations, but I doubt if there can be any unified theory of species."[33]

"Each species is a separate puzzle, a little exemplar of scientific methodolgy requiring hypothesis, (and) test. . ."[20]

"Some taxonomists may not care whether two organisms belong to different (cryptic) species, but it certainly matters to them [the organisms]."[34]

"Species are not specious"[35]

"Gorges may be gorgeous,
Boys may be boisterous,
Vars may be various,
But facts are not factious,
Spurs are not spurious,
Pies are not pious,
And species are not specious."[36]

Species, subspecies, varieties

"The category of species has a special status in the taxonomic hierarchy . . . each species represents a 'real' unit in nature. . . Above the species level, we encounter a certain arbitrariness. . . Below the species level, we have only the subspecies. . . We need to satisfy two criteria: (1) A subspecies must be recognizable by features of its morphology, physiology, or behaviour, that is must be 'taxonomically' (and by inference, genetically) different from other subspecies; and (2) a subspecies must occupy a subdivision of the total geographic range of the species. . . The category need not be used . . . there is no requirement that a species be divided into subspecies. The subspecies is a category of convenience. We use it only when we judge that our understanding of variability will be increased by establishing discrete, geographically bounded packages within a species."[37]

". . .the subspecies as conceived by Du Rietz (ie the geographical race) has become debased by its use in many different situations, in particular for groups of inbreeding taxa, groups of cultivars, and semi-cryptic cytotypes."[38]

"Of the . . . principal sources of error in any work of the nature of a [flora], one is unavoidable, and that is the impossibility of deciding, in many cases as to what should be regarded a species and what a variety. . ."[39]

". . . most subspecies are not to be taken too seriously. . . Thus . . . one would never set about looking for subspecies to describe; rather, they would be the occasional by-product of studies of geographic variation."[40]

". . . traditional taxonomy runs into trouble at infra-specific levels. . . The papers . . . contain repeated references to the idea that in some cases it is more fruitful to describe, graph, or tabulate infraspecific variation than it is to classify it."[41]

Species names: would a Pointer help?

". . . Species names are proper names. . . It is not only difficult, but logically impossible, to list the attributes necessary and sufficient to define their names. None such exist, and the only way to define these names is by an ostensive definition. That is to say, by "pointing" to the entity which bears the name."[34]

"It is not irrelevant to recall here that if one attempts to teach a dog by way of ostensive definition, it invariably responds by sniffing one's fingers."[42]

Species: individuals or classes?

"Traditionally, species (like other taxa) have been treated as classes (universals). In fact they may be considered individuals (particular things). The logical term 'individual' has been confused with a biological synonym for 'organism'. If species are individuals, then: (1) their names are proper, (2) there cannot be instances of them, (3) they do not have defining properties (intensions), (4) their constituent organisms are parts, not members. 'Species' may be defined as *The most extensive units in the natural economy such that reproductive competition occurs among their parts.*"[34]

"Species . . . are properly classes possessing family resemblance essences, not individuals. . ." [43]

A-teschew! Excuse me – what did you say?

"If ever the time was appropriate to eschew reports of natural hybridism which are based on such evidence 'as apparently intermediate' or some such euphemism, that time is now."[44]

Avoiding growsing and brazing in godzone

"In the forests of primitive New Zealand, except certain species of moa, there were *no* grazing or browsing animals, while so far as the giant birds were concerned these would chiefly live in the open"[45]

Vegetation

". . . vegetation may be compared with a pattern of colored lights cast upon a screen, a pattern formed by innumerable overlapping individual beams of light, some bright, some faint, some broad, some thin, some of simple and some of complex form, but most having a brighter center and dimming gradually away from this, all somewhat mobile, changing position and intensity through time, moving somewhat independently and thus changing their relations to one another, composing all together a blended, intricate, and fluid pattern."[46]

". . . the vegetation of an area is . . . the resultant of . . . the fluctuating and fortuitous immigration of plants and an equally fluctuating and variable environment. . . Every species of plant is a law unto itself, the distribution of which in space depends upon its individual peculiarities of migration and environment requirements."[47]

". . . environment varies constantly in time and continuously in space; environment selects from all available immigrants those species which constitute the present vegetation, and as a result vegetation varies constantly in time and continuously in space."[48]

Succession

"We can . . . explain all the intriguing, predictable events of plant successions in simple, matter of fact, Darwinian ways. Everything that happens in successions comes about because all the different species go about earning their livings as best they may, each in its own individual manner."[19]

The whole truth and everything but the truth

"Of course some will argue that natural ecological systems have holist properties that represent more than the sum of their parts plus their interactions. If this is so, the study of these systems should perhaps be carried out by theologians rather than scientists."[49]

"The evolution of biological communities, though each species appears to fend for itself alone, produces integrated aggregates which increase instability. There is nothing mysterious about this. . . The types of holistic philosophy that import *ad hoc* mysteries into science . . . are obviously unnecessary."[50]

"Plant communities, unlike organisms, have no phylogeny, and are assembled from component species with widely differing . . . histories."[51]

Vegetation and soil in the landscape

". . . every vegetational community is the botanical part of a unique geographic ecosystem which gives it meaning, and it is neglect of the geographic framework which has led to the false assumptions that . . . [such] communities can be studied as things-in-themselves. . ."[52]

"It is . . . clear that . . . [there is a] close interrelationship between forest types, terrain and soils . . . [though] in places obscured by historical accidents. . ."[53]

". . . what other natural body [than soil] . . . has so many interesting secrets to reveal. . .? The great events of long ago – volcanic eruptions, dust storms, floods

and Ice Ages – have left their imprints. . . In its form and properties it expresses the combined influences of the local climate, shape of the land, and the rocks and organisms that are broken down and incorporated into it."[54]

"An ecological survey would also highlight the growing realization that ecology is an earth science, as much as or more so than a biological science."[55]

". . . the physical form of the land is a powerful determinant of its recognisable ecological character. . ."[56]

The scientific paper

"Praise is the tribute which every man is expected to pay for the grant of perusing a manuscript."[57]

"Nobody has yet presented me with a convincing argument in favour of anonymous refereeing. . . Quite simply, I do not believe there is one. . . Show me a scientist who favours anonymous refereeing and I will show you someone who is insecure."[58]

Warily I say unto you

"Who ever said that when you open a journal you are reading a message carved in stone by some higher being? Every time one reads the scientific literature, it is necessary to be wary. . ."[59]

Infidels! Off with their z's!

". . .they [. . . entities labelled, for example. . .*Hebe* sp.(t), . . .] obscure the literature, promote regional differences and dissentions, create uncertainty, and risk disrespect for orthodox taxonomic revision."[60]

Publish or perish?

"Science . . . has yet to find ways of reducing incentives to publish, for example, by laying less stress on quantity as the primary basis for gaining continued support and accelerated promotion."[61]

Science

". . . the Copernican Revolution did not take place at the drop of a hat or two from the Leaning Tower of Pisa."[42]

"The principal business of the human mind . . . is fantasy. . . Without fantasy, science would have nothing to test; without testing, fantasy would be unchallenged."[62]

"All observation is an activity with an aim . . .; an activity guided by problems. . ."[63]

"The importance of the individual decreases as the number of practitioners increases: of an observation is not made here today, it will most frequently be made somewhere else tomorrow."[64]

". . . bad ideas are rarely proved wrong in science: they are simply forgotten. . . Science is successful, over the long run, because time winnows the wheat from the chaff."[65]

"Knowledge increases not by the matching of images with the real world . . . that is, not by the direct perception of truth but by a relentless bias toward the perception of error. This is as true of folk knowledge as it is of science."[62]

". . . in science we are taught, or come painfully to learn, that to fall in love with a hypothesis is one of the roads to ruin."[66]

"The road to wisdom? – Well, it's plain and simple to express:

Err
and err
and err again
but less
and less
and less."[67]

"He also had that consuming curiousity which is the real reason for any scientific research. . . In the last analysis, most of what we are that beasts are not is due to this impractical but orderly curiosity which is called pure science."[68]

"There is a false notion that scientists set out objectives, and then in a linear fashion go from point A to B to C. . . That's how a bureaucrat would like science to work. . . Science simply dosen't happen thát way. It involves going where your curiosity leads you . . . often landing you far away from where you intended."[69]

"Out of these [*hypotheses*] we create a world: not the real world, but our own nets in which we try to catch the real world." [63]

"Behold the turtle, he makes progress only when he sticks his neck out."[70]

"Keep on going and the chances are you will stumble on something, perhaps when you are least expecting it. I have never heard of anyone stumbling on something sitting down."[71]

"We are now in a position to see why it is inherent in Popper's view that what we call our knowledge is of its nature provisional, and permanently so. . . If we are rational we shall always base our decisions. . .on 'the best of our knowledge', as the popular phrase so rightly has it. . ."[72]

"The great tragedy of Science – the slaying of a beautiful hypothesis by an ugly fact."[73]

"Science is done by human beings who are after status, wealth and power, like everybody else . . . if you don't scrutinize yourself carefully, and you really think that you are just objectively depicting the world, then you're self-deluding. The capacity for self-delusion is amazing."[74]

"You would like yours, of course, to be the last discovery. But alas – or, I prefer to say, happily – it is not so."[75]

Scientific method

"The idea that science can, and should, be run according to fixed and universal rules, is both unrealistic and pernicious. . . All methodologies have their limitations and the only 'rule' that survives is 'anything goes'."[76]

"[An] illusion [about science] . . . is that there is a single 'scientific method', a touchstone that can distinguish what is scientific from what is not."[62]

". . . I often began my lectures on scientific method with an explanation of why this subject is nonexistent – even more so than some other nonexistent subjects."[63]

"How do I know what I think until I have heard what I have to say."[77]

'Science' a buzz word?

"Science is a fuzzy set within the field of human knowledge . . . a much fuzzier set than many scientists think."[62]

". . . we do not need a general category 'science' with respect to which some area of knowledge can be acclaimed as science or denigrated as non-science."[42]

"Why bother . . . once it is admitted . . . that philosophy or methodology of science is of no help to scientists? I suggest the most important function of my investigation is to combat what might be called the *ideology of science* as it functions in our society. This ideology involves the use of the dubious concept of science and the equally dubious concept of truth that is often associated with it. . ."[42]

Sacred Cows

"To the Establishment, some things are sacred, including Religion, Science and Cows. These are the grim realities of life and, believe me, there is nothing grimmer to me than Religion and Science. . . Humour is the great leveller, the great humanizer, the great destroyer of illogical pomposity. Religion and its monozygotic twin, Science, are by the Establishment's definition supernatural in some sense. The barbed point of wit destroys the illusion, decapitalizes the nouns, and reduces Religion and Science to mere human occupations."[78]

Science then and now

"I once asked a student who had a big xerox bill whether he'd tried neuroxing some papers. So he asked me what that was. I said 'It's a very easy and cheap process. You hold the page in front of your eyes and let it go through there into the brain'."[79]

"Science . . . was small; it was cheap; it was wide open. One could still do experiments in the old fashioned sense of the word. Now, everybody is working away at 'projects' the outcome of which must be known in advance, since otherwise the . . . financial investment could not be justified."[80]

"There is . . . a danger that science may no longer have room for scholarly people who do not care for the rat-race. That could be disastrous."[81]

"It would seem to me that what we need is the return of the really able amateur, because that is what, in the true sense of the word, we should all be. . . With a slightly reduced working week everyone should be expected to take part in various sorts of volunteer activity of which scholarship would . . . be a particularly attractive one."[82]

Science and politics

". . . no science is immune to the infection of politics and the corruption of power. . ."[83]

". . . *science* will most effectively serve the community when its opportunities and priorities are not distorted by even greater demands for relevance to currently perceived needs."[84]

". . . in these days of cost-consciousness, when the funding of research is being administered as if scientific research where a branch of the retail trade, and when 'pure science' and those who practise it are coming under an increasingly cynical scrutiny, it is well to remember the definition that Oscar Wilde puts into the mouth of Lord Darlington in *Lady Windermere's Fan:* a cynic is 'a man who knows the price of everything and the value of nothing'."[85]

"Science is drifting steadily towards a structured bureaucracy. . . Can innovative or heroic science prosper in such a bureaucratic system?"[86]

"Scientists . . . now march . . . behind the banner of a benevolent warfare – welfare – corporatist state . . . curiosity and its loyalty to the life of the mind remain a tattered ideal. . ."[88]

Is there hope?

"Even now, I think, there are men who live for science, men who strive to bake not witches' mess but giant's bread. What they deliver may be as tedious to the plebs as a lute, but let us not forget that while a cure for cancer may raise the mean age of the population to ninety, a good lute may last to make beautiful music under the hands of men and women yet unborn."[88]

"The Demese ef the Ne'enderthels: Wes Lengege e Fecter?"

"Et seems qwete prebeble thet the Ne'enderthels ked speke less well then ther seccessers, end thet thes wes the resen fer ther demese. Bet even ef we beleve the kempeter reselts et seems emprebeble thet ther speech wes enedeqwete bekes ef the leck ef the three vewels seggested. The kemplexete ef speech depends en the kensenents, net en the vewels, es ken be seen frem the generel kemprehensebelete ef thes letter.

Jehn H Fremlen
Depertment ef Phesecs
Eneversete ef Bermenghem
Bermenghem B15 2TT, Englend"

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