

# Fire in Africa: A Brief Re-Survey

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DR. and Mrs. Komarek, Roy Komarek, Mrs. Poe, all of the staff of Tall Timbers Research Station, distinguished visitors, you will bear with me if I appear like Ed did last night, when he got his honorary D.Sc., a little overcome.

This is a tremendous pleasure, and will be an abiding joy. I have found that so much of the best has come to one undeserved! Ed would say that of Betty, I would say that of my own lady! I am indeed tremendously privileged to be told in Ed's typically frank, friendly American manner that this Symposium, and the publications springing therefrom, are to be dedicated to me. I feel deeply what has been said. I take this as being a tribute to the work which men and women have done (I must stress a number of women have been concerned) in South Africa—and to a number of South Africans who have gone to East, West and Central Africa and to other parts of the world: men and women who have learned to think ecologically, learned to appreciate the fundamental veracity and the inspiring stimulation of the holistic concept.

I want to stress at the outset of our gathering that the study of fire, as Ed has indicated, is more than the study of just another of Nature's processes. Fire ecology is indeed ecology in the widest and the deepest

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<sup>1</sup> Verbatim, from a tape made at 11th Fire Ecology Conference, April 22, 1971.

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sense: the community, the habitat, the reciprocal relations between habitat and the community: the biotic community as I like to think of it: the plants, the animals great and small, be they elephants or microfauna, bacteria, *Sequoia* sp. or African *Ocotea* sp.; the reciprocal interplay of all forms of life and the environment.

I know some purist will already have said to himself, "You have left out the most important animal of the lot—*Homo sapiens insapiens*." Forgive me, but I have always attempted to include *Homo sap.* in the biotic community for, in Africa, one cannot think of ecology without thinking of man. In Australia you may for a time forget about man, until you come near human settlement or you meet any of the very few remaining aborigines. But in Africa, in its deserts, sub-deserts, wooded savanna, tropical forests and all other biotic communities, man exists. Man is therefore ever in the mind of those who study the ecology of fire in that vast continent.

On behalf of those who have been invited from abroad I wish to express gratitude to Ed, Betty, Roy, and to so many others, past and present, who have stood with them, in endeavouring to bring to the light of day some of the facts of the ecosystem, with special reference to conserving and managing some of the great biotic communities in this country. Thus we were very proud last night to hear from the President of Florida State University, from the Dean of the Faculty of Science and from our distinguished friend and colleague, Professor Odum, of the appreciation in which this State, and Science, in this particular field in this great country hold Ed. In holding Ed in deep respect, they are automatically paying respect to those who have served with him, respect to the Station, to the memory of Mr. Beadel and of those who come after him in providing the sinews of war for keeping the Station in being.

I am invited to review burning of vegetation in Africa. I told Ed that if he wished a bibliographic report I could give that to him, in time, but that there were matters which go beyond bibliographies! Ed has borne with me, so I am to speak to you from my mind, from my heart, about several matters of general concern.

Students in many parts of Africa are deeply grateful for investigations conducted in your country. We are, of course, indebted also to certain other authorities in Britain, Switzerland and France, but Africa

is particularly grateful to the schools of Cowles in Chicago; of F. E. Clements—blessed with a remarkably fine mind; of that great animal ecologist, Victor Shelford; of Allee of Chicago to whom a tribute was graciously paid last night by Ed; and of that “Professor-at-large”, one-time Dean of the Law School at Harvard, Roscoe Pound, who helped along a youthful Frederic Clements to write his first papers! These were some of the men who inspired work along particular lines in field ecology throughout the world. In stimulating ecological studies they also stimulated the investigation of one of the almost universal factors of the environment, FIRE! But do understand that whilst I have mentioned the British, the Swiss, and the French in passing only, I am indeed deeply conscious of what they did! But I do believe that the gratitude of Africa is more bountifully due to the American schools which stimulated so much thought in so many diverse directions.

Let me think back just a little. I have just been told kindly and discreetly but also very directly by Professor Odum, whilst he was talking with a young friend who will address us later, Mr. Winston Trollope, that even men who have examined vegetation for ninety years ultimately die, that much which they have in their minds should be recorded and that, therefore, modern approaches to ecosystem studies should be aided by the computer. With this I agree, but I put the computer aside for the moment, and throw my mind back sixty years. With luck I might still attain Eugene Odum’s “90 + say 20 years!”

I had parents, not University but simple people, but they knew something of South Africa’s plants and animals, Bantu people, and White settlers. From them I inherited a keen interest in our veld, and, because of that I became conscious, from 1908 on, of the influences, good and bad, which fire has had in my country. Later I was able to see its influence in East, West, and Central Africa, and also three other continents!

When I went to a professorship at the University of Witwatersrand in 1931, a great ecologist, philosopher, statesman and soldier, Jan Christian Smuts—General Smuts cast me a problem based upon his concept of holism: to work out the “ten commandments” of burning of vegetation in Southern Africa.

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We haven't worked these out yet! Can we ever work them out? I put this to those studying burning; we are challenged by a most involved process, a series of complex reactions. We must therefore be humble in attempting to apply the interpretations derived from observations and experimentation, even when aided in future by the *right* feeding in of the *right* material to the computer!

I told the General I couldn't give him the ten commandments because of the very complexity of the phenomenon. "On one aspect of your farm you should burn at a certain season, on another you *should not* burn at that particular time! You should burn thus on your grassland farm at Irene, but don't do this on your bushveld farm 50 miles away because the local ecosystems are so different. The General was disappointed: "Like all scientists you split hairs! Go away. Come back in 10 years!" I couldn't go back in 10 years because the Field Marshall, as he then was, was directing our war effort. But, at the end of the war I was able to check matters with him. He had meantime realized he had asked the impossible about the ten commandments of burning. Many students of "burning" have still to realize the same universal truth!

I know that Ed and his co-workers have learned some of the answers locally, but they would be the first to say that in a further 10 years they might well wish to modify what they may now claim in light of their present understanding. And so it must be!

When I remember Cecil Rhodes's dying words: "So much to do, so little done," I have impressed upon me the thought that there is so much we shall never know! That must be outweighed by the faith that if we work hard enough and are honest with ourselves and with Nature, we shall slowly begin to formulate these great commandments.

I touch now upon several points of significance.

First, I believe, that the challenge to us in Africa has really only just been cast as to our knowledge and the application of such knowledge as we may have. I say this with understanding, sympathy and respect, and my good colleague Mr. Olindo, a very senior officer from Kenya, I am sure will understand when I say that the challenge to Africans will grow greater as those all too few ex-patriate officers with the background and experience dwindle and disappear, long be-

fore they have had ninety years service in the art and science of firing aright! Obviously more and more Africans must take over the direction, more and more must sift experience for the truth, more and more must show initiative and set the lead! It will not be easy for them. It is never easy for the scientific investigator to explain his objectives and his data to the administrative pundit. It's also not easy for the administrative officer, no matter how inspired he may be or how much he may be aided by the scientific investigator, to get a particular principle accepted by a minister or a cabinet. African investigators are clearly experiencing just these same kinds of human ecological challenges as ex-patriates did in the past. One can do nothing but wish them well in their efforts to educate their leaders!

Secondly, there is still a confusion of aims. I tried to summarize this in a paper presented to you in 1965: the forester wants to achieve a particular objective and burns, accordingly. The pastoralist wants something different so he too burns but, differently. The wildlife conservationist and manager (he must be a *manager* because as a conservationist alone he only understands a part of the story) wants something in between. We must clarify our concepts and our objectives. I believe this is something which the professors, wherever they may be, should instill into those who go out to serve, be they Africans, Europeans, Americans, *that there must be clear objectives* in the theory and practice of burning. Do not let us mix our objectives: as you know when you mix your drinks you're liable to have a bad time later!

Thirdly, and you will be surprised at this, Africa has had so much time; she has remained the least known of the continents for so long, but since the second World War there have been tremendous changes! Not only political changes and related economic ones, but changes in the process of development of all kinds, from the spiritual to the material; changes in approaches to education, health, and related matters. I fear that unless Africans, who have inevitably had to accept these great changes, have the inspiration, strength, and determination to learn more and more about the challenges of burning and otherwise managing the ecosystems of their continent, there will be such vast and deep changes in these during the coming century that much information will have been lost forever.

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I have attempted to describe elsewhere (Phillips, 1959, 1965) what I fear might be the Africa of about a century ahead. I won't burden you with this, but there are going to be mighty changes. What could burn today will not burn then because there will be different types of vegetation, different stages of biotic successions, and different ecosystems. There will be new *proclimaxes* and *subclimaxes* and some of these will be very different from those which we know today. *Time is not on Africa's side.*

I hope that the leadership given here by Ed will be appreciated and gainfully used by other centers and authorities in this country and in Africa herself. It could come about, in the course of time, that the United States of America could increasingly help those few remaining ex-patriates working in Africa and the Africans who are trying to keep burning the torch of enlightenment concerning the manipulation of the vegetation in appropriate setting, so that either livestock production or wildlife management and production may prosper. This demands money, but, even more, men, mind, and morality of the finest minting.

Most important, I want to stress with vigour and in all the sincerity I can muster that *the ecological approach, in theory, is not enough.* I have been fortunate since going back to my own country, about seven years ago, to be thrown once again much into the practical field. I am still young enough to walk and even young enough to ride in one of those abominable things known as Land Rovers which knock one's vertebrae out of position. Because I have been able to do that and camp in the veld, camp in the ecosystems, to be with young men with their sharp stimulating minds, and to have the opportunity of attempting to apply in practice techniques which theoretically ought to give us more knowledge, I have continued to learn something about the role of ecology in bringing about a better understanding of natural resources and their interplay. Those who are called planners could have sounder foundations upon which to build, if they are willing to learn what I am learning: theory, practice, and humility!

Ed indicated that ecology has become almost a four-letter word. Planning has become perhaps a three-letter word! There is no need why this should continue. Ecology must rally to the support of planners and planners must, I believe, be more co-operative in learning

the principles of ecology. At the same time the ecologist must be determined to provide the services so urgently needed, and in due humility.

In the course of and because of these field and related peregrinations and the study of parameters, from geology to water, from the soil to vegetation, from the bioclimates to the pedo-ecological systems, from microbe to man—I believe that we are drawing nearer to a sounder understanding of the real challenges and opportunities for the conservation and sound development of extensive sectors of Southern Africa for all ethnic groups. What we are studying forms some of the fundamental data which could be fed to the metaphoric computer on which Professor Odum utters words of wisdom.

I end on a note of encouragement. Happiness is freedom, freedom is liberty, liberty not license: freedom to think, freedom to act. Freedom to serve in the finest possible sense is a precious gift. Freedom brings that happiness which makes the ecologist, the student of fire control and usage, a better man or woman. And as happiness is freedom, freedom is courage! We must, therefore, have increasing courage to forge ahead, to take up whatever the challenges may be in the tasks ahead.

*Per ardua ad astra*: through adversity we may attain immortality!

#### LITERATURE CITED

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