



Reliving reality virtually

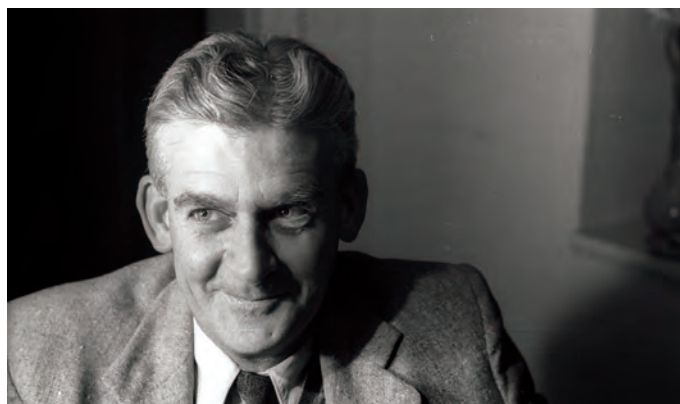
Exploring the records of the past for the future

by **Leslie Ward (Les) Powrie**, Deputy Director: Information Technology Advisory Services, South African National Biodiversity Institute, Kirstenbosch Research Centre

ABOVE: Roof-top photography at Perdepoort on the north side of the Klein Winterhoek Berge near Jansenville (Eastern Cape) on 4 May 1953. A photo taken by John Acocks on one of his numerous field trips in southern Africa.

Are you an explorer, or do you have any curiosity about being an explorer? Imagine yourself as a 25-year-old embarking on a career. Could you anticipate that during the course of the next 40 years you would explore the veld in almost every district of South Africa? Could you imagine that more than seven decades later thousands of people would be closely involved in using your legacy of photos, field notes, specimens, registers, publications, maps, hypotheses, conjectures, and much more?

I doubt that John Acocks could have imagined such outcomes when in about 1936 he started to work in the Division of Botany of the Department of Agriculture. However, in about 1990, his field notes were used to extract some 300 000 records of about 7400 species-occurrence records at about 3000 sites around South Africa and southern Namibia for use in modelling to assess impacts of climate change on species. These records are in 44 foolscap field notebooks, comprising about 8200 written pages, of which over 7200 pages have already been extracted. But there remain many records that he wrote between his main sampling sites that were not included in this extraction exercise. In addition to the field notebooks there are 13 registers containing details of his collections that number over 25 000 specimens, and books listing over 7400 photographs that he took, including about 600 large format black and white (including some emulsion on glass slides), 6000 35 mm black and white negatives and, starting in 1958, 800 35 mm colour slides. Acocks's best known work is his map and book *Veld Types of South Africa* that was the standard reference work from the time of its publication in 1953 to about 2003 when *The Vegetation of South Africa, Lesotho and Swaziland* was published.



ABOVE: John Phillip Harison Acocks (7 April 1911 Cape Town–20 May 1979 Middelburg, Eastern Cape) used his observations to create the map of the *Veld Types of South Africa* that underpinned South African vegetation and botanical work for 50 years (1953 to 2005). I guess this is a selfie, but decades before selfies taken with hand-held digital cameras.

Besides Acocks, there were many pioneers in biodiversity studies in South Africa, starting more than four centuries ago. Explorers discovered new worlds, crossed new frontiers, and each left his or her legacy, including dried or preserved labelled and mounted specimens, living collections, field notes, artworks, books, photographs, and many other products. These modern pioneers were preceded by people who left records in the form of rock art, dating back millennia. Then there are fossils remaining from the beginning of life on Earth. We each leave our own records, and never know whether we might look back at them ourselves, or if someone else may look back and appreciate the records and observations that we leave for posterity.

Technology in SANBI

I remember being told that Brian Huntley, the CEO of the National Botanical Institute (NBI), referred to his paper notepad on which he wrote with a pen or pencil as his notebook. At that time he was supportive of the Information Technology needs of the institute, but was very careful to not allow 'the tail to wag the dog'. Not long after that, he obtained a laptop computer and became quite adept at using his modern 'notebook'. He pursued technological solutions to the work of the institute. He bought and showed me the first camera with a built-in GPS. Now, the South African National Biodiversity Institute (SANBI) is quite progressive in its use of technology for accomplishing its functions as it co-ordinates research, monitors and reports on the state of biodiversity in South Africa, and provides knowledge and information used in planning and policy advice. SANBI also pilots best-practice management models in partnership with stakeholders.

A new type of contribution to research work includes Citizen Science and Crowd Sourcing or Volunteerism. Many individuals are leaving a contribution, either of original information, or extracting information recorded by others, including pioneers like Acocks. My first participation in the volunteer effort was in extracting birth, marriage and death records from photocopies made from microfilmed

government or church records. This Name Extraction Program of the Utah Genealogical Society builds on work starting in 1894, and the current indexing program started in 1961. There are now more than 268 000 indexers who indexed more than 121 million names in the first nine months of 2014 alone, adding to over one billion records already available for online searching.

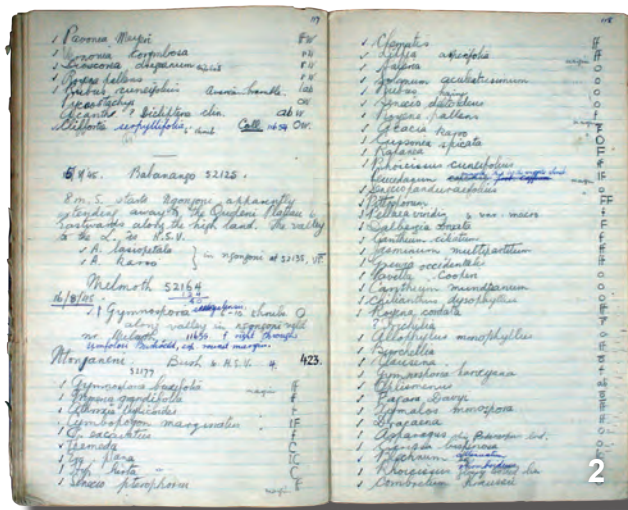
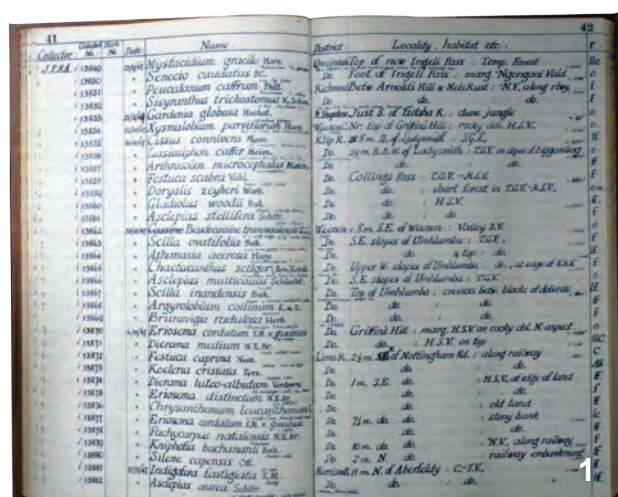
In 1987 I engaged young citizens (scouts and scholars) in recording phenology and growth rates of trees in the Lowveld National Botanical Garden. SANBI has the iSpot Citizen Science website for sharing and identifying southern African biodiversity. Other worldwide volunteer projects include Knowledge Discovery & Management, Gamification, the Internet itself, Wikis, and mobile technology. The Oxford English Dictionary was first started by volunteers contributing six million definitions over a period of 70 years.

SAFARIS (Southern African Friends and Researchers Indexing Specimens) is a new SANBI volunteer program providing at least two benefits: firstly, they enable researchers to explore information from the past as the records of the past are made available for online access; and secondly, those volunteering take part in virtual explorations as they journey with the explorers of the past, transcribing their notes and experiencing in a small way what those early workers experienced, reliving the past reality in a somewhat virtual way.

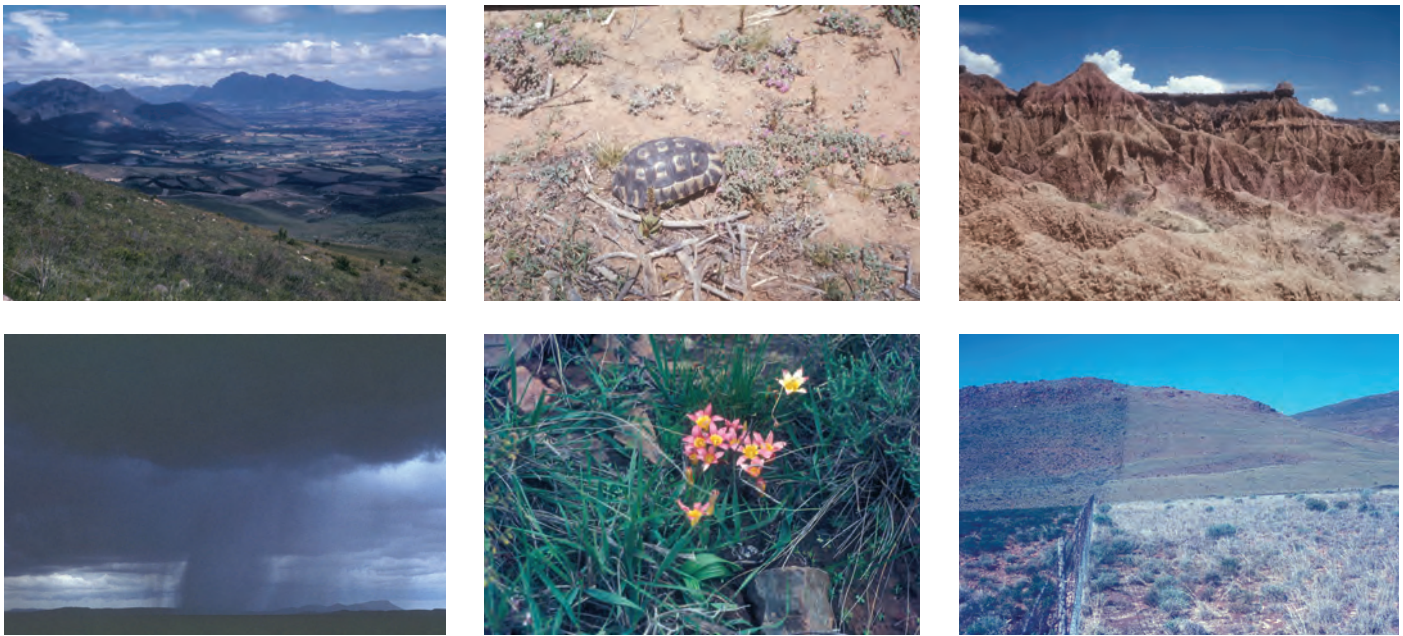
A wonderful opportunity

The SAFARIS initiative is to mobilize and georeference data from museum and herbarium specimens and field notes, making it possible to search, find and view the specimens and information online. Images of specimens or field notes are put online for volunteers or others to transcribe text from the image. The image and its transcribed text thus becomes searchable and discoverable online, enabling anyone looking for the kind of information that the image contains, either to view a high resolution image of a specimen, or to view the context in which specimens or observations were made. This information can then be used in practical ways to address research, knowledge, conservation, management and policy aims, taking information from paper and elevating it into the clouds of cyberspace.

Doing the georeferencing of records is perhaps the best way to relive Acocks's travels. For example, trying to determine the locality of Cashel Hotel (Brits district) which is given as the place where he collected specimen number 12555. Task 63 of Book 3 shows that on 14 March 1946 Acocks collected *Rhynchosia densiflora* subsp. *chrysadenia* near the hotel. The SANBI Gazetteer has Cashel Farm, Dam and Ranch in North West Province about 275 km west of where Acocks was on the day, so without the benefit of modern roads, it was not at all feasible for that to be where he collected the specimen. In trying to determine where the hotel might have been, I followed his movements as best as I could on the day using his field notes and collecting register and concluded that he was in the Brits Magisterial District 45 miles (72 km) from Brakpan, and in Thornveld. I then discovered by looking at the catalogue of his photos that he had taken some photos on that day, and they confirmed that he was in Thornveld. I later determined that he had collected two other specimens near Cashel Hotel (Brits or Pretoria District) on 1 February 1946 and from his records it appears as though the hotel is almost certainly near Hartebeestpoort Dam, probably close to Tan Malie se Winkel to the west of the dam wall.



1. A page from Book 4 of the collecting registers. Acocks's writing was usually very neat.
2. A page from field notebook 1. The writing is not always as neat, but still good. Note his record indicating landmarks and mileages that are a great help in identifying where he travelled in order to give latitude and longitude to his records.



ABOVE: Acocks took many photos of landscapes, processes, weather, rock art, plants and animals, giving the impression that he was passionate about his life and his work.

Learning while volunteering

I have been fascinated typing records from Acocks's notes of decades past. I had been involved in a small way in looking at invasive species, and then noticed some of the names of alien invasive species in Acocks's records from 72 years ago. On 25 October 1942 he recorded *Echium plantagineum*, commonly known as Patterson's Curse, which was abundant in winter-ploughed lands near Isidenge (Stutterheim district, Eastern Cape province). This species is from Europe and Asia, is dispersed by seed and can spread over long distances in fodder or packing material. Knowing of the past distribution of invasive species assists researchers in the Invasive Species Programme of SANBI to assess the rate of spread of invasive species.

As I have georeferenced collections using the location details given by Acocks, and using logic to see where he had been and where he went after the collection, I have learned about some of the geography of South Africa. It can be a real challenge to determine where a place is, especially if it is a small locality that is not included in the gazetteer of Google Earth or Google Maps. Internet searches can sometimes give leads, but I find it particularly useful to refer to the 1936 edition of the Topographical Map of the Union of South Africa that Acocks used. He had drawn red dots on his maps, and for some strange reason, given his precise recording practices, he did not identify the sample sites on his maps. But his red dots confirm many localities when following his travels in a day, and his written mileages at recorded landmarks.

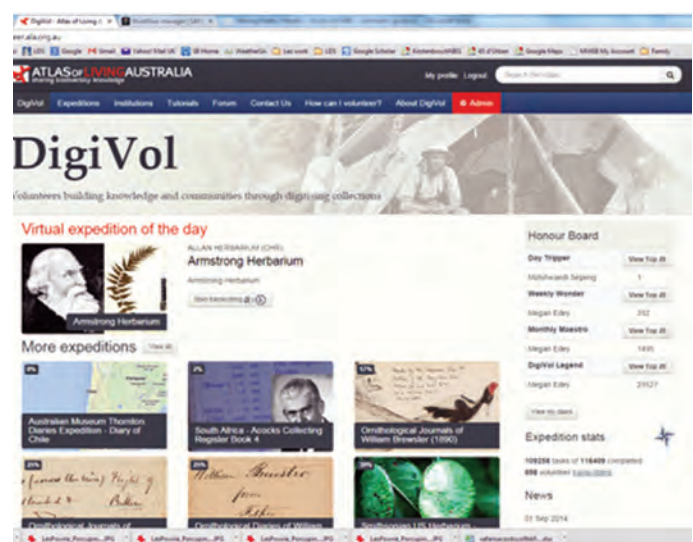
It is no surprise to me that some of the volunteers have said that georeferencing can be addictive!

As we work on historical records we sometimes find that new things are not new. We can learn new lessons from old lessons. Our discoveries may be forgotten discoveries that were made long ago. We can see if things that were are still as they were, or measure the change. This is exciting data mining, a wonderful alternative to gaming or simply relaxing watching television or participating in activities that are not particularly of value to ourselves or to anyone else.



ABOVE: The green dots represent Acocks' sample sites. In his travels, he visited just about every magisterial district in South Africa.

BELOW: If you like the sound of reliving this reality that is far better than virtual reality, then go to volunteer.ala.org.au, click on Log in, Register as a user, and if you do not see Acocks's smiling eyes, then click on 'View all' next to 'More expeditions'. Search for SAFARIS if you do not see a South African project in the list.





ABOVE: Photos taken by Acocks on 14 March 1946, the day that he collected a specimen near Cachel Hotel. The vegetation is Veld Type 13 (Other Turf Thornveld) as at Hartebeestpoort Dam rather than VT16 (Kalahari Thornveld) found at Cachel Dam (SW of Mafeking), and the vehicle registrations NEC (Estcourt [Council?]) and TAH (Nylstroom) are consistent with those of guests at an hotel rather than local vehicles (Pretoria TP or Brits TAZ). He collected the specimen 45 miles from Brakpan, his next stop.

Why give time to do something for nothing?

Some would say that volunteerism is certainly not doing something for nothing. There is a unique reward in choosing to use one's time for indexing old records. It is certainly adding valuable information to our knowledge and contributing to valuable biodiversity research in South Africa. But the individual also benefits from this use of time. Here are two examples of testimonials by indexers (see reading list below).

A mother grabs moments while her older children are at school and younger children are having a nap, to index a batch of vital records. She says that, while some household chores seem to be never-ending, her indexed batches give a definite sense of accomplishment and achievement. 'Before I began indexing, I didn't feel very useful. Now I know I am helping others. And it's not just that. Indexing helps me with coordination in my hands, and it keeps my brain working. It's therapeutic for me in a lot of ways.'

Another volunteer, a pilot with a complicated schedule, snatches moments at hotels at night when, rather than watching TV, he can actually do something that helps others, accomplishing something that makes him feel really good. To date, some of the greatest contributors to the SAFARIS work have been Australian

men with time on hand, and they have enjoyed contributing to the transcription of Acocks's notes. We thank them. We salute them! We have four other major contributors, one BotSoc volunteer and three from SANBI.

Any computer connected to the internet enables you to index records for SAFARIS. Dropbox is useful as it enables one to work on different computers linked to the internet. The essential ingredients are: computer or mobile device, internet, indexer and validator. You can be part of this winning recipe.

We invite you to join us in exploring the records of the past to discover things that they knew and had discovered, making a searchable digital online index of scanned images of museum and herbarium specimens and historical documents.

READING

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GET CONNECTED

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