



BEE NEWS & VIEWS

The Mississippi Beekeepers Association Newsletter

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September - October 2013

What's That Awful Smell?

Honey Plants of Mississippi

By Audrey B. Sheridan

The late summer dearth of nectar plants has finally ended and our striped friends are now enjoying the bounty provided by fall-bloomers. For the past two weeks, the restored prairie habitats around my house have been putting on a show of *Asteraceae*: goldenrod, blue ageratum, various sunflowers, and dozens of other purple, white and pink asters that I can hardly name. All of these plants are being visited by our little honey-makers, but the goldenrod is dominating every open field and tree line, and the bees are spending most of their efforts on its tantalizing yellow sprays.

Walking past the nodding heads on my daily trek through the prairie, I catch a whiff of buttery sweetness—not the foul odor that beekeepers often associate with goldenrod. No, this is a much milder, pleasanter aroma than the stinky nectar characterizing a fall flow in Mississippi apiaries. So I wonder: what is the source of that sour smell that permeates the bee yard when the asters are in bloom?

As I venture further down the path into the shrubby woods, the answer finds me. In fact, it nearly knocks me down with an overwhelming reek of a hundred sweaty socks dipped in vinegar and hung in a gym locker to dry.

Looking around for the source of the smell, all I see is goldenrod and little purple asters, until my eyes drift upward into the understory. Tall, cloud-shaped shrubs covered in tiny silver-tipped tubes create a dense visual barrier between prairie and forest. Interspersed with these are nearly identical shrubs covered with creamy white buttons. Both plants seem to be attracting every manner of native pollinators as well as the neighbors' honey bees.



Photo credit: Barbara Farr

A timid close-range sniff of the button-flowered bush confirms that this is indeed the source of the apiary stench; the silver tubes of the other bush have a much milder aroma.

Next day at the office, I would learn that this offensive plant is none other than *Baccharis halimifolia*, also known as Groundsel Tree or Sea Myrtle. It is a dioecious (male and female flowers occurring on separate plants, which explains the buttons and tubes), native shrub in the Aster family which occurs in lowland and coastal habitats, roadsides and field edges throughout the Southeast—and honey bees love it. The male plant provides both nectar and pollen, but I do not know whether the strong odor originates from the nectary or the stamens, or both. The female “tubes” are filled with very light and sweet nectar—I know this for a fact because I sampled a few buds on my walk. (I have since learned the plant is toxic, but the nectar is not).

The honey from groundsel tree is of mild flavor and desirable quality, and the foul odor is not present in ripened honey. The female flower is wind-pollinated, and thus does not require the sequential visitation of bees from male to female plant. Once

pollination has occurred, the female tubes transform into tiny silver paintbrushes that gives groundsel tree a shimmery appearance described by another common name, Silverling.

Although I have found no information on the quality of *B. halimifolia* pollen, it is apparently a major source of fall allergies in humans. So, perhaps habitual consumption of fall honey and stinky pollen will help ease the discomfort of allergy sufferers? Perhaps not. Either way, our beloved honey bees are lapping up every drop of nectar and grain of pollen from the generous groundsel in preparation for winter, so if you need a good fall forage plant—and you can put up with the awful odor of *Baccharis*—you might consider moving your bees to the groundsel trees!

For Dialysis Patients, It was a Honey of an Idea, but antibiotics are still preferred for preventing catheter infections, study says

By Robert Preidt, Health Day Reporter (WebMD)

FRIDAY, Oct. 12 (Health Day News) -- Patients with kidney failure who are undergoing dialysis sometimes develop infections at the site where a catheter enters the body. These infections are most often treated with antibiotics, but recently "medical-grade" honey has emerged as a possible alternative therapy.

A new study published online this week in *The Lancet Infectious Diseases*, however, finds that applying the honey to catheter-wound sites is no more effective than taking antibiotics for preventing infection in patients who receive dialysis through a tube in the abdomen (called peritoneal dialysis).

In addition, a high number of patients in the honey group asked to withdraw from the study, which "suggests that patients may have found the daily application of honey to the wound site uncomfortable or inconvenient," study lead author David Johnson said in journal news release.

Catheter-wound infections can be life threatening and usually are treated with antibiotics. The types of antibiotics suitable for use in such cases, however, work only against a narrow range of infections, and

increasingly contribute to germs becoming antibiotic resistant.

Prior research has suggested that medical-grade honey -- created by thorough sterilization of standard honey -- would be effective against a wider range of microorganisms that cause infections and would not contribute to antibiotic resistance.

This new study included 371 peritoneal dialysis patients treated at 26 medical centers in Australia and New Zealand.

Johnson's team found no significant difference between those who received a daily application of medical-grade honey at the site of catheter insertion and those who received the antibiotic mupirocin.

The average time to first infection in the honey group was 16 months, compared with about 18 months in the mupirocin group. For patients with diabetes, the average time to first infection was much shorter in those treated with honey (11.6 months) than in those who received the antibiotic, and the risk of infection also was nearly twice as high as those who got the antibiotic.

"While the fact that honey doesn't contribute to antibacterial resistance makes it an attractive option for preventing infection at wound sites, our results suggest that honey cannot be routinely recommended for the prevention of infections related to peritoneal dialysis," said Johnson, of the Australasian Kidney Trials Network (University of Queensland) and Princess Alexandra Hospital in Brisbane, Australia.

One expert in the United States agreed that medical-grade honey may not be a better treatment option.

"At this point in time, honey cannot be recommended over conventional therapy for prevention of peritoneal-dialysis-related infections," said Dr. Mala Sacheva, a nephrologist in the division of kidney diseases and hypertension at North Shore University Hospital in Manhasset, N.Y.

"In fact, it may be inferior to conventional therapy in the diabetic population," she said. "Further studies are [needed]."

SOURCE: Mala Sachdeva, M.D., nephrologist in the department of medicine, division of kidney diseases and hypertension, North Shore University Hospital, Manhasset, N.Y., and Long Island Jewish Medical Center, New Hyde Park, N.Y.; The Lancet Infectious Diseases, news release, Oct. 9, 2013; Copyright © 2013 Health Day. All rights reserved

MS State Fair Winners Honey, Wax and Display Competition

By Jeff Harris

I judged the annual honey, wax and student display competition at the Mississippi State Fair Grounds in Jackson on October 5, 2013. I thank the Central Mississippi Beekeepers Association for creating and manning the booth for beekeeping. This event is an excellent forum for interacting with the general public and talk about honey bees. It was also a chance for selling honey and other hive products.

I was a little disappointed in the number of entries this year, which seemed to be lower than last year. In particular, the number of wax entries was drastically lower. Many felt like the implementation of judging standards scared some folks away. This surely was not my intent – I was just trying to inform all participants of the standards to which they would be judged. So, please, I encourage your participation next year. The rules are just meant to help you prepare your best product for the contest.

Most of the honey submitted for judging belonged to the extracted liquid category, but there were at least two chunk honey entries. The biggest problem seen in all entries was high moisture content. Anything above 18.6% moisture was disqualified, and this represented about one third of all entries. I suspect that the high moisture content may be related to Chinese Tallow honey being a major component of the extracted honey. This plant is notorious for producing a lot of nectar, and the honey frequently retains high moisture content. The reason the honey was disqualified is that moisture above the upper limit will surely ferment – the only question is when.

The other major problem was finding particulate matter, which includes pollen, in several jars. In

general, a few specks of pollen can be tolerated, but swirls of pollen grains within the honey or rafts of grains on the surface will lead to deductions. I have had inquiries about deductions for pollen because some recent laws in several states have declared that pollen must be present in honey to consider it honey by legal definition. These laws are attempts at reducing the adulteration of honey or the passing of non-honey substances (*e.g.* sugar water fed to bees and stored as “honey”) to consumers by unscrupulous people.

However, the rules for honey shows have more to do with the condition of the product as in a beauty contest. Particulate matter not only deters from the aesthetics of honey, but particles can serve as sites for the formation of sugar crystals, which can cause an entire jar of honey to crystalize. Although crystallization is not spoilage, many consumers find it an annoying condition. Therefore, judges often deduct for excess pollen. To avoid the problem, filter your honey several times.

Extracted honey was grouped into three classes – light, amber and dark. Walter McKay won 1st place in the light category, and there were no other winners in that class. The amber class winners were Leon Boutwell (1st place), Walter McKay (2nd place), Carson Boutwell (3rd place) and Michael Cape (4th place). There were no winners in the dark class.

Beeswax entries can occur in two ways. Either blocks or cakes of bulk wax (like those made by beekeepers who sell their wax back to bee supply companies) or decorative items made from wax. All wax entries this year were in the latter category. Harry Hughes won 1st and 2nd place for two separate entries, and Sammie Searcy won 3rd place.

Finally, there were two student display posters entered for competition. John Mark Lott won 1st place for his poster about major bee diseases, and his brother, Matthew Lott won 2nd place for his poster that described how honey is harvested from bee colonies. Please congratulate both boys for their efforts. Both consulted references AND real life beekeepers (interviews) to obtain material for their posters. We need to encourage more children to compete next year.

The rules for judging honey and wax have been uploaded to the MBA website (<http://www.mshoneybee.org/>). I will use these same rules to judge the MBA honey and wax contest at the upcoming MBA convention in Tupelo, MS on November 15-16, 2013.

Row Crop and Honey Bee Commodities Meet Jointly at MS Farm Bureau Federation

By Jeff Harris

The two groups met at the Farm Bureau Federation office near Jackson, MS to discuss issues important to both groups on September 18, 2013. In particular, there has been increased tension developing between beekeepers and row crop farmers over the use of pesticides and other agrochemicals that can have harmful effects on honey bees and other pollinators.

Although there is no concrete evidence that the high mortality of honey bee colonies that has been called “colony collapse disorder” (CCD) is related to specific insecticides, some people argue the major cause of these losses must be either a specific class of insecticides, or the global use of all insecticides. Although insecticides almost certainly contribute to the deaths of bee colonies, the current scientific conclusions are that huge bee losses are due to multiple factors that include Varroa mites, viruses, poor nutrition, travel stress and pesticides. It is the additive effects of multiple stressors believed to cause huge colony losses.

The increasing tension between beekeepers and row crop farmers in the U.S. has become palpable to government agencies such as the Environmental Protection Agency (EPA). Generally, there does not seem to be an extensive problem with losses of bee colonies in Mississippi. Occasionally, there are bee kills from insecticide drift onto bee yards from aerial applicators. The frequency of these incidents seems relatively low. However, it is difficult to know if the actual incidence is low because beekeepers are hesitant about reporting such incidents. Some commercial beekeepers fear that they will be asked to move their bees if they formally complain about bee kills from bee drift.

However, some of the largest commercial beekeepers in Mississippi say that the problem here is much smaller than in other states.

The goal of the Farm Bureau meeting was to find common ground between the two groups, and to adopt language in the policy book that supports both commodity groups. One fear is that the EPA could force changes onto row crop farmers in all states as response to specific situations limited to some states. The Farm Bureau Federation also does not want to be in a position where the demands of one commodity group adversely affects the livelihood of members in the other commodity group.

I was apprehensive going into the meeting. I just was not sure of the emotions of all participants. I did not expect a fist fight, but I really did not know what might occur. I was pleasantly surprised to find good will among all participants. I sensed a genuine understanding from the row crop farmers to the problems of beekeepers, and I also sensed that the beekeepers understood the need of the row crop farmer to use pesticides in their crop production.

There were even good examples of beekeeper-row crop farmer partners in the room. For example, there was a cotton-soybean farmer who opts to use ground rigs to apply insecticides when his fields are close to bee yards. He normally applies chemicals to his fields using airplanes, but he tries his best to reduce risk for the beekeeper by keeping the planes away from the bees. There was also a beekeeper who regularly speaks to the farmers and aerial applicators that own or operate within the fields near his bees. The beekeeper is on a first name basis with everyone, and he fosters an interaction with them that helps protect his bees. The farmers call to let him know when they will be applying chemicals and asks if there is something special that they should do to help protect his bees. This beekeeper considers many of these people to be his friends.

After much discussion, the following bullet points were adopted for inclusion in the MS Farm Bureau policy book:

- We recognize the ecological and economic importance of pollinators and the necessity to judiciously utilize crop protection products to protect against loss of crop yield. We support the coexistence of crops and pollinators and urge that any pollinator risk assessment required for registration or regulation of crop protection products be based on field-relevant, sound scientific data.
- We support the establishment and restoration of honey bee pastures and forage areas on federal and state land.
- We support an extensive educational outreach effort coordinated by MSU-Extension Service and Mississippi Farm Bureau to further encourage more collaboration and communication between farmers and bee keepers.

I left the meeting feeling like the row crop farmers really do not want to harm honey bees. Even if their crops do not directly benefit from pollination by honey bees (e.g. honey bees may only increase the value of soybean yields by 5%), these men understand that honey bees are very important for U.S. agriculture. Many of them were not fully aware of the CCD problem, and they seemed genuine with their concern over the losses.

In fact, one very helpful idea was generated by Dr. Angus Catchot (MSU extension entomologist specializing in cotton) and Andy Whittington (Farm Bureau Environmental Specialist) that could help reduce the accidental drift of pesticides onto bee yards. The idea is to develop a universally recognized flag symbol to represent honey bees and to place these flags in fields near the bee yards. The flags would be brightly colored and visible to the aerial applicators, and with an accompanying education program, the aerial applicators would learn to avoid the flagged areas when applying agro-chemicals.

The same flag symbol could even be used to signal mosquito control truck operators to stop spraying

when encountering the same flag along the side of a road where a bee yard exists. I will be meeting with several people over the next few weeks to further develop the idea, but one thing that MBA could do is to help develop the symbol to put on the signal flags.

USDA Project with Pesticides and Honey Bees

By Jeff Harris

Leaders of the U.S. beekeeping industry met with USDA and university scientists from throughout the southern states to discuss planned experiments aimed at examining various aspects of pesticide use in row crops and honey bee health on October 2, 2013 in Poplarville, MS. The beekeepers in attendance included Steven Coy (American Honey Producers Association), George Hansen (American Beekeeping Federation), Bret Adee (member of the largest commercial beekeeping family in the U.S.) and Joe Sanroma (representative of Merimack Valley Apiaries, a large migratory beekeeping operation).

The meeting was fairly awkward because the government shutdown that began the previous day forced many participants not to come. These included bee scientists from the Bee Labs in Baton Rouge and Tucson, and even the leader of the entire research project (Dr. John Adamczyk) could not formally participate. Other participants included row crop extension and research scientists from Arkansas, Texas, Tennessee and Mississippi. Dr. John Skinner (TN) and I were the only honey bee extension specialists in the room.

The project was initiated sometime in June this year after Steven Coy (and others) spoke to USDA leaders about the problems of beekeepers and high colony losses in some agricultural environments. The overall goal of the project is to conduct research that will ultimately increase the safety of honey bees while foraging in intensely agricultural environments. Perhaps everyone in attendance could agree on such a lofty goal, but looking at details of the proposed research is where unity within the group seemed to disappear.

Some of the beekeepers want the focus to be primarily on the timing of insecticide applications. For example, they would like to see studies where late evening or night time applications of insecticides are compared to daytime applications to see which methods protect pollinators better. A large contingency of row crop researchers want to focus on the potential of neonicotinoid seed coat treatments in southern row crops to cause harm by contaminating pollen or nectar from treated plants (e.g. cotton and soybean). Other planned experiments will seek to measure effects of insecticide exposure at the colony level and at the level of individual bees (and how do these two levels relate).

There were many other experiments planned, and I am only stating some of the highlights. Many of the beekeepers were unhappy with the planned research because it did not fully meet their expectations, and it was also revealed that the funds allocated for this work are really only a one-time allocation. Some of the beekeepers want a more sustained research effort into the problems of pesticides and bees by the USDA.

The discussions continue, and there will likely be some meaningful work come out of this project. However, it is not likely that the project will please everyone. Dr. John Adamczyk will speak about the program at our MBA convention in Tupelo, MS. Hopefully, he can clarify many of the issues that he could not discuss during the government shutdown.

Science Review: Viruses and Queen Honey Bees

By Jeff Harris

Swiss and French scientists recently reported finding a new disease condition of the ovaries in queen honey bees (Gauthier *et al.* 2011). The group received 130 queens from beekeepers during 2007-2009. The queens were 1, 2 or 3 years old (with roughly equal numbers of each age group). The beekeepers donating the queens reported that 65% of the queens were considered deficient or poor egg-layers. The scientists dissected 88 of the queens and examined their ovaries for any abnormal tissue conditions. They also conducted molecular scans for 10 different types of viruses from the

ovaries and abdomens of all 130 queens. They compared these virus loads to those of 40 virgin queens.

The team found that most of the deficient egg-laying queens were in the 1-year old group. Of the 88 queens dissected, about 56% of them had yellow discoloration in the apex of the ovary. Most of these discolored ovaries only had a few follicles with discoloration. In fact, the presence of some yellow discoloration could not be linked directly to problems with egg-laying in the queens. However, there were 10 queens with a high degree of yellowing ovaries. These queens were all considered deficient egg-layers, and they varied among the three age groups.

Further microscopic examination of these ovaries indicated extension lesions in the ovary. There were also crystalline structures that are characteristic of damage caused by viruses. When the team scanned for 10 viruses known to affect honey bees, deformed wing virus (DWV) and *Varroa destructor* virus 1 (VDV-1) were found to be related to the lesions in the queen ovaries.



Queen ovaries with yellowing and degenerating tissues (usually the entire ovary is a clean white color)

Although it is tempting to suggest that the presence of these two viruses is likely the cause of the egg-laying problems, the research team found high viral titers in normal and deficient egg-laying queens in a large survey of queens. There simply was no correlation between amount of viruses in the tissues and the quality of egg-laying by the queen.

In fact, in a second experiment, they sampled 59 two-year old queens that were all considered good egg-laying queens. They found queens with yellowing ovaries in the group, and they chose 12 sets of yellowing ovaries to compare with 12 sets of normal ovaries from the same group. They

compared the titer of virus between the two sets, as well as the expression of two genes in ovary tissue that are important for producing eggs. They found no correlation between DWV and VDV-1 virus titers and gene expression, which reinforces the findings of their first survey.

However, there seems to be some indication that these viruses may be involved in poor egg-laying, but there are likely other factors that contribute to the pathology. For example, DWV can exist in tissues of the abdomen of queens without causing obvious pathology of the ovary. However, some other condition (eating pollen laced with insecticide, etc.) could somehow contribute to a weakened condition that allows development of the yellowing ovaries caused by viruses. Interestingly, 100% of mated queens examined had DWV and 67% had VDV-1. Only 37% of virgin queens had DWV and none had VDV-1. This supports the notion that DWV is transmitted to queens by drones during mating. It is also known that DWV is transferred from a queen into her eggs, which eventually infects her worker daughters produced from these eggs.

So, it may be that the extreme cases of ovarian damage occur when other factors affect the health of queens and allow the viruses to destroy follicles. Another way of looking at it, generally healthy queens can carry viruses in their bodies without any signs of disease, but if other factors disrupt their normal physiology, resident viruses may be able to attack tissues. Clearly, more work needs to be done. For example, this work was with viruses, but can *Nosema* species have similar effects on queens?

Source:

Gauthier L., Ravallec M., Tournaire M., Cousserans F., Bergoin M., Dainat B. and J. R. de Miranda (2011) Viruses associated with ovarian degeneration in *Apis mellifera* L. queens. [PloS ONE](https://doi.org/10.1371/journal.pone.0016217) 6(1): e16217. doi:10.1371/journal.pone.0016217.

Renew Your Membership Now!

We are asking that folks renew their MBA memberships beginning in September-October of each year. It would also be nice if all renewals are

completed soon after our annual convention each year. In the past, membership renewals tended to trickle into the Secretary/Treasurer throughout the entire year, which is fairly inefficient. Our organization continues to grow, so please keep renewals and new members coming! Contact Jeff Harris (jharris@entomology.msstate.edu) or Stan Yeagley (candsyeagley@att.net) for a membership application, or visit our website <http://mshoneybee.org> to download a registration form.

MBA Annual Convention Only Weeks Away

The Mississippi Beekeepers Association will hold their annual convention at the Clarion Inn & Summit Center in Tupelo, MS on Friday-Saturday, November 15-16, 2013. Several speakers with substantial national and international stature will present either current research or topics important to beekeeping at the general session. These include Dr. Medhat Nasr (Provincial Apiculturist, Alberta, Canada), Dr. Jerry Hayes (Monsanto), Mr. Phil Craft (of the "Ask Phil" column in *Bee Culture*), Dr. Jeff Gore (Delta Research and Extension Center, Stoneville, MS) and Dr. John Adamczyk (USDA, ARS in Poplarville, MS). A banquet meal will occur Friday night, and there will also be a honey contest judged by Dr. Jeff Harris.

Preregistration is requested. A block of rooms have been reserved at the Clarion Inn (852 N. Gloster Street, Tupelo, MS 38804; 662.844.4343) to accommodate attendees. **For copies of the agenda, registration forms and other details please contact Jeff Harris** ((662) 325- 2976; email jharris@entomology.msstate.edu).

Important deadlines:

Please reserve your hotel rooms by November 1, 2013 to secure the group rate (\$79 + tax). Note that there will be a block of 25 rooms for two nights beginning on Thursday, November 14, 2013. These rooms will accommodate those who will attend the MBA Executive Board meeting on Thursday evening at 7:00 PM. An additional 50 rooms will be blocked for Friday night.

Please pre-register for the convention and banquet meals by November 1, 2013 so that we can have an accurate head count for all activities.

Upcoming Events

The **American Beekeeping Federation's** North American Beekeeping Conference and Tradeshow will be held January 7-11, 2014 in baton Rouge, LA (see <http://www.nabeekeepingconference.com/>)

The **American Honey Producers Association's** annual convention will be held January 7-11, 2014 in San Antonio, TX (see <http://www.ahpanet.com/?page=AHPAconvention>)

Honey Harvest

Late in March, when the days are growing longer
And sight of early green
Tells of the coming spring and suns grow stronger,
Round the pale willow-catkins there are seen
The year's first honey-bees
Stealing the nectar: and bee-masters know
This for the first sign of the honey-flow.

Then in the dark hillsides the Cherry-trees
Gleam white with loads of blossom where the gleams
Of piled snow lately hung, and richer streams
The honey. Now, if chilly April days
Delay the Apple-blossom, and the May's
First week come in with sudden summer weather,
The Apple and the Hawthorn bloom together,
And all day long the plundering hordes go round
And every overweighted blossom nods.
But from that gathered essence they compound
Honey more sweet than nectar of the gods.

Those blossoms fall ere June, warm June that brings
The small white Clover. Field by scented field,
Round farms like islands in the rolling weald,
It spreads thick-flowering or in wildness springs
Short-stemmed upon the naked downs, to yield
A richer store of honey than the Rose,
The Pink, the Honeysuckle. Thence there flows
Nectar of clearest amber, redolent
Of every flowery scent
That the warm wind upgathers as he goes.

In mid-July be ready for the noise
Of million bees in old Lime-avenues,
As though hot noon had found a droning voice
To ease her soul. Here for those busy crews
Green leaves and pale-stemmed clusters of green strong
flowers
Build heavy-perfumed, cool, green-twilight bowers
Whence, load by load, through the long summer days
They fill their glassy cells
With dark green honey, clear as chrysoprase,
Which housewives shun; but the bee-master tells
This brand is more delicious than all else.

In August-time, if moors are near at hand,
Be wise and in the evening-twilight load
Your hives upon a cart, and take the road
By night: that, ere the early dawn shall spring
And all the hills turn rosy with the Ling,
Each waking hive may stand
Established in its new-appointed land
Without harm taken, and the earliest flights
Set out at once to loot the heathery heights.

That vintage of the Heather yields so dense
And glutinous a syrup that it foils
Him who would spare the comb and drain from thence
Its dark, full-flavoured spoils:
For he must squeeze to wreck the beautiful
Frail edifice. Not otherwise he sacks
Those many-chambered palaces of wax.

Then let a choice of every kind be made,
And, labelled, set upon your storehouse racks —
Of Hawthorn-honey that of almond smacks:
The luscious Lime-tree-honey, green as jade:
Pale Willow-honey, hived by the first rover:
That delicate honey culled
From Apple-blossom, that of sunlight tastes:
And sunlight-coloured honey of the Clover.

Then, when the late year wastes,
When night falls early and the noon is dulled
And the last warm days are over,
Unlock the store and to your table bring
Essence of every blossom of the spring.
And if, when wind has never ceased to blow
All night, you wake to roofs and trees becalmed
In level wastes of snow,
Bring out the Lime-tree-honey, the embalmed
Soul of a lost July, or Heather-spiced
Brown-gleaming comb wherein sleeps crystallised
All the hot perfume of the heathery slope.
And, tasting and remembering, live in hope.

Written by Martin Armstrong

He was born in Newcastle-on-Tyne (England) in 1882 and educated at Charterhouse and Pembroke College Cambridge. His first publication of poems appeared in 1912. He served during 1914-1915 in the 2nd Artist Rifles, then commissioned into the 8th Middlesex Regiment from 1915 through to the end of the war, demobbed in 1919. He served in France on the Western Front. His book *Buzzards and other Poems* was published in 1921. Martin Armstrong died in 1974.

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