



INTERNATIONAL HONEY MARKET

by RON PHIPPS

A SEA CHANGE

For the first time in a long time we can realistically talk of the honey market reaching an inflection point. This period calls for the wisdom of patience and resisting the siren calls from Masters of Market Manipulation which beekeepers in North and South America are now hearing.

After the releases of:

- 1) the U.S. Pharmacopeia, Food Chemicals Codex (FCC) Honey Identity Standard,
- 2) the honey testing provisions in the U.S. Congress' 2020 Omnibus Appropriations Act,
- 3) the proposal from the Honey Integrity Task Force, chaired by Darren Cox, urging aggressive sampling and the use of advanced scientific tests by government agencies, and
- 4) Apimondia's "Evaluation of the Direct Economic Impact of Decreasing Prices of Honey," estimating over \$1 billion of economic losses to North and South American beekeepers during the past 5 years, resulting from honey fraud and honey adulteration,

the entire chorus is singing in unison a new song.

When considering the problem of adulteration, it is important, indeed crucial, to realize that according to Codex Alimentarius standards, to which the U.S. is committed, the addition of any adulterated product to a composite with other constituents makes that composite adulterated. Therefore, if a product contains 100% adulterated products, 90%, 60%,

40%, or even 10%, the composite is adulterated.

The monumental Apimondia meeting in September 2019 was the largest assemblage of scientists, beekeepers and members of the international honey industry for a forum on the reality, nature and solutions to the plague of adulterated honey, and helped set the stage for these new developments.

THE CURRENT MARKET

The current situation includes: a) a huge flood of incredibly cheap honey imported into the U.S. from India and Vietnam; b) U.S. honey industry preparations underway for 2021, by which time strict testing regimes from the U.S. government and the market are anticipated; c) fear in exporting countries of a new anti-dumping petition in the U.S.; and d) concern about impending shortages in the supply of authentic honey in a market, transformed by the compelling fight against food fraud.

As early as the beginning of June 2020, some players were trying to secure authentic honey for considerably higher prices. Others anticipate the demand for authenticity in honey will move the prices in forthcoming periods of high-quality honey to \$2.00-3.50/lb. and in later phases \$3.50-4.00/lb. That means there is anticipation that the price of honey in the first stage of a market freed of the decade-long onslaught of adulterated honey may rise to \$4,200 to \$4,500 per metric ton and in the second stage to \$6,000 per metric ton.

An inflection point of rising prices reflects fear of both 1) the power of a potential antidumping case, and 2)

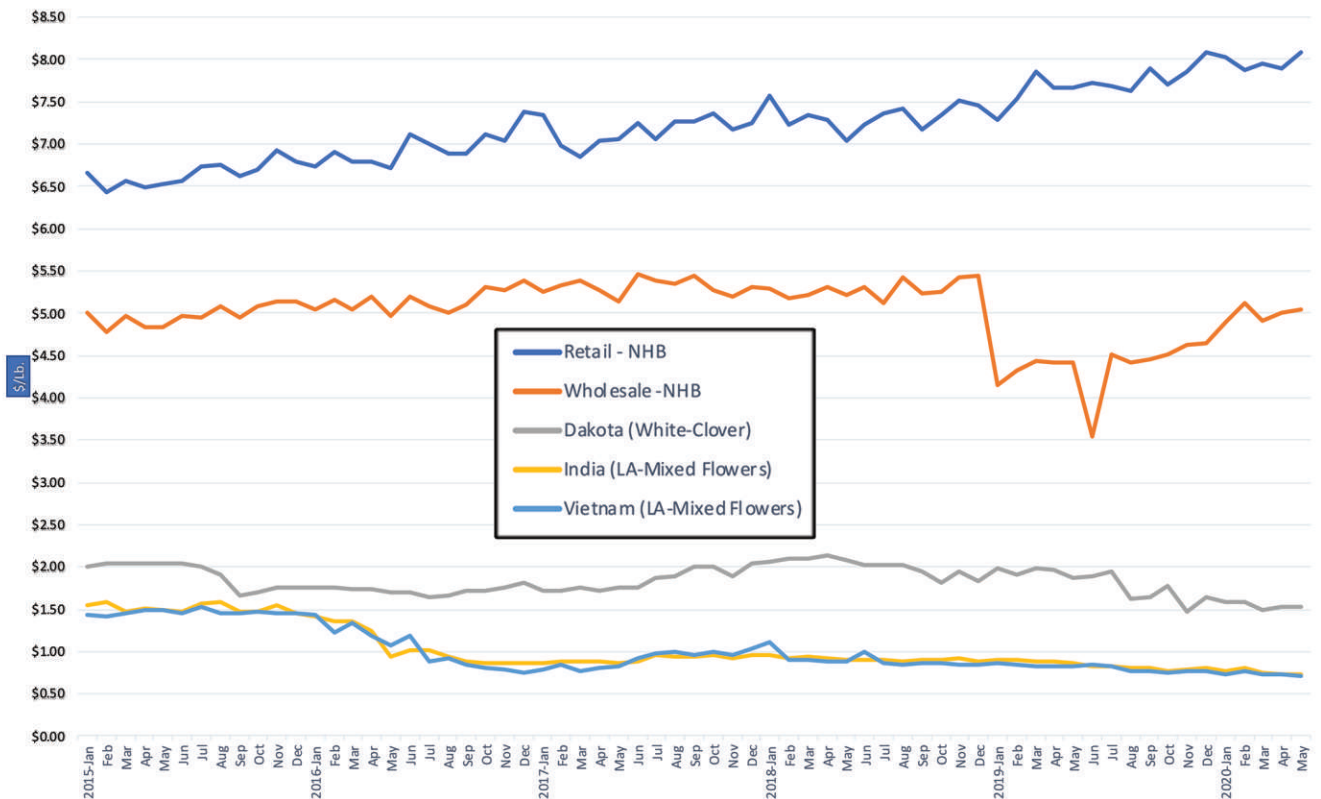
the demands for authenticity and the end of food fraud in the honey sphere.

There have been reports in many exporting countries that an anti-dumping petition is being prepared. As we write this, we cannot confirm or deny that this is the case. But the widespread reports are already contributing to price increases in some countries.

Dr. Daberkow's economic analysis (see chart on next page) reveals that the price gap between retail and wholesale prices has been at a modest and normal level. In contrast, the gap between wholesale prices and the cost of honey inputs has been abnormally large. Prices for imported Indian and Vietnamese honey have been declining since 2016, for U.S. Dakota honey since 2018. That means there have been high profits for a few and huge losses for beekeepers. The Apimondia report "Evaluation of the Direct Economic Impact of Decreasing Prices of Honey ..." regarding economic losses to North and South American beekeepers, which was released by the American Honey Producers Association in June 2020, estimates what would be expected of prices in a context in which consumption of honey is growing. Those selling to retailers have ample room to increase their prices for honey and, on the other hand, beekeepers have a compelling opportunity to recover losses which have resulted from food fraud and economically motivated adulteration of honey.

Because of the international exposure of the multiple modes of adulteration that have plagued the past decade, we can anticipate that the

Retail and Wholesale Honey Prices Compared to Honey Prices Paid to U.S. Beekeepers and Importers for Selected Honey Types: Jan-2015 to May-2020



Source: National Honey Board and AMS National Honey Report

negative manipulation of the honey market is coming to its conclusion. This implies that a serious shortage of authentic, high-quality honey is impending.

Prices of honey have already significantly increased, and efforts to buy forward have surged. Beekeepers and exporters anticipate that from the nadir of non-remunerative prices, prices of authentic honey will double in the intermediary, and in the not too distant future, triple. If advanced scientific technology, which can detect multiple forms of adulteration prevalent in the marketplace, is correctly and fully utilized, very significant quantities of adulterated honey will be removed. A chart (Garcia, Phipps, Adeo) showing the great disparity between the number of global beehives (stable) and the rapidly increasing volumes of global honey exports was shown by numerous scientists at Apimondia and recently in Japan, as one of many important indicators of the magnitude of adulteration. The U.S. Pharmacopeia's Food Fraud Database concluded that honey was the third most adulterated food within

the food supply. This conclusion was reached without the use of advanced technology, which would have surely increased the magnitude of adulteration present.

THE CONFLUENCE OF POSITIVE DEVELOPMENTS

On June 30, 2020, the U.S. Pharmacopeia (USP), chaired by Prof. Norberto Garcia, released a proposed Food Chemicals Codex (FCC) Identity Standard. This document is an outcome of the recommendation of Prof. Michael Roberts, world expert on food fraud, which first appeared in his important White Paper. Prof. Roberts' first and second White Papers should be mandatory reading for all members of the American honey industry, and indeed the international honey industry.

The USP's cardinal description is: "Honey is the natural sweet substance produced by species within the *Apis* genus from the nectar of plants or from secretions of living parts of plants or excretions of plant-sucking insects on the living parts of plants which the bees collect, transform by combining with specific substances of

their own, deposit, dehydrate, store, and leave in the honeycomb to ripen."

This reconfirms the formal Statement on Honey Fraud approved in January of this year by Apimondia. There is now growing awareness that the authenticity of honey cannot be defined without reference to its modes of production.

Both documents represent the work of prestigious scientific, academic and beekeeping experts in the international honey community who have collaborated to form these important documents and guidelines. They were formed as a result of 1) growing and comprehensive awareness of the modern modes of adulteration of honey, which singularly and/or in combination, have caused the erosion of authenticity and purity in the international honey industry and a collapse of the honey prices, and 2) the development of powerful scientific techniques which are helpful to expose food fraud and economically motivated adulteration not only in the spheres of honey but in fruit juices, wines, olive oil, coffee, fresh and frozen fish, and pharmaceuticals.

Concurrent with these cardinal documents, is the plan that U.S. Customs intends to begin testing imported honey for country of origin using advanced techniques, including Nuclear Magnetic Resonance, and a proposal in a Congressional Appropriations Bill for the FDA to examine honey for economically motivated adulteration, using advanced techniques.

The Honey Integrity Task Force proposal requests "consideration of more robust regulation and enforcement to counter the threat of Economically Motivated Adulteration in the honey industry ... options including increased surveillance at entry ... [and] use of the most advanced available analytical techniques."

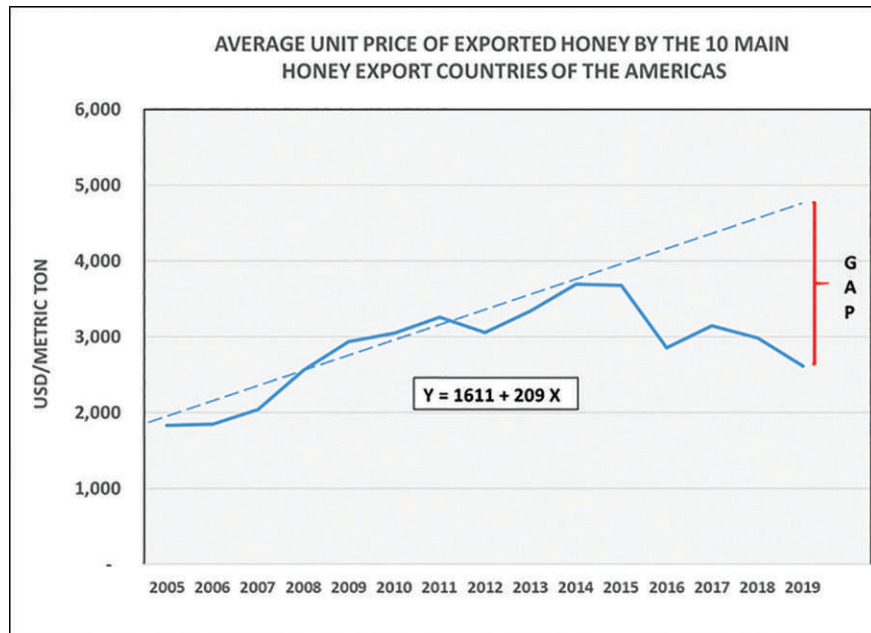
A recent BBC article by Pamela Parker (June 26, 2020) described the challenges to honey producers. It stated, "Chris Hiatt, vice president of the American Honey Producers Association, says that something has to be done. 'We need a decent price to keep our businesses going,' he says. 'It is a serious problem.'" I was also quoted in the article: "'The reality is not that American beekeepers are non-competitive,' he says. 'The problem is other countries are using means of production, which have been observed and documented, that allow production of huge quantities of adulterated honey whose production costs are extremely low.'"

These are all powerful tributaries to a great river leading to justice and integrity in the honey industry. More media attention is on the horizon.

QUANTIFYING LOSSES CAUSED BY ECONOMICALLY MOTIVATED ADULTERATION OF HONEY

In June 2020, the Apimondia Regional Commission of the Americas and the Apimondia Scientific Commission of Beekeeping Economy jointly issued an analysis documenting the magnitude of the economic losses suffered by beekeepers in South and North America over the past five years, described as "the greatest damage to beekeepers in human history."

If the honey industry had begun rigorous testing, using powerful scientific technology to detect the modern modes of adulteration, the losses of over \$1 billion dollars to beekeepers would most likely not have occurred. Those losses can be laid at the feet of those who chose illicit profits over economic fairness, bad science over good science, fantasies over



facts. The consequences were devastating to U.S. beekeepers.

"If the price trend observed during the period 2005-2014 had continued (which could have been expected under increasing demand and inelastic offer), the price for honey would have reached \$4,700 per tonne by 2019, a difference of more than \$2,000 per tonne with the observed price."

We note that in the June 2020 Honey Market Report a similar analysis for the U.S. market was presented.

RECENT U.S. MARKET STATISTICS AND TRENDS

A terrible trend toward even lower prices from the exporting countries India and Vietnam can be seen in the 2020 import statistics for the first 5 months. This represents an alarming effort to flood the market with cheap honey before new standards are vigorously implemented. In May, import prices for Indian Extra Light Amber and Light Amber respectively sank to \$0.63-0.64/lb., a 17% decline relative to May 2019. In the same period, Vietnamese Light Amber prices declined 16%, from \$0.63/lb. to \$0.53/lb. Indian and Vietnamese honey import volumes went from a combined 41% in 2019 to almost half of the total honey import volumes in the first five months of 2020. The price collapse left the combined value at less than 30% of the total import market.

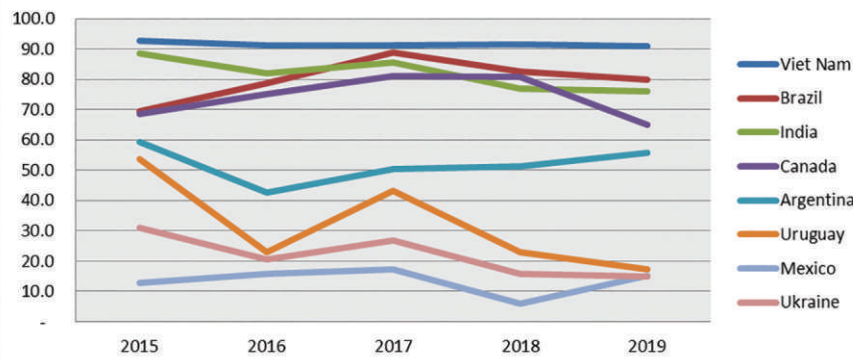
These statistics create a Perfect Storm providing the foundation for a powerful and effective antidumping suit against the lowest priced exporting countries.

Dr. Daberkow has observed that based on the 2020 Honey report from NASS/USDA and the ERS/USDA honey export/import data, U.S. honey consumption has declined two straight years from the record of 596 million pounds in 2017 to 550 million pounds in 2019 (down 46 million lbs. or 7.7%). The Nielsen Sales Report has indicated that honey volume fell 2.7% in 2019 compared to the previous year. Raw and Organic honey are growing in market share. Imported honey volumes peaked in 2017 at 448 million pounds, and fell to 417 million pounds in 2019.

During the three months when the Department of Commerce evaluates whether to accept or deny a petition claiming dumping, restrictions are placed limiting any increase of quantity of imports to under 15%. The purpose is to prohibit a surge of dumped honey into the market. At the onset of the persisting China honey dumping case, there was a surge of imports. There is concern about the volumes in the recent period.

The analysis of some experts is that the collapse of pricing is not due to dumping, which is selling under cost, but to adulteration using rapid extraction of unripened honey, blending of cheap bioengineered rice sugars (syrups have been exported at \$0.15-0.39/lb.), use of resin technology, and other methods. If that was not the case, the huge volumes of honey exports from low-priced exporters could not be sustained over such a long period. The fundamental problem is not dumping, but adulter-

DEPENDENCE ON THE U.S. MARKET OF THE MAIN HONEY EXPORTERS TO THE U.S.



ation. That adulteration is the foundation of the collapse of honey prices and the endangerment of beekeepers producing authentic honey.

It is astonishing to think that in two decades India went from having zero exports of honey to the world to become a main source of U.S. imported honey. Of course, people have witnessed and there is abundant evidence that India's adoption of the China model of honey production is part of this achievement.

A beekeeper has succinctly summarized the situation as follows: "The dreadful collapse of honey prices is a classic example of the manipulation of markets benefitting a small cartel and threatening the survival of beekeepers in North America."

"LOCAL HONEY"

On the one hand, the emergence of local honey marketing is an example of the creative marketing of honey in its diversity, authenticity and charm. Sales at farmers markets, roadside stands, and online are serving as a godsend to many beekeepers and also are harbingers of a new era for marketing honey as a whole. The marketing of wine by region of production has achieved such growth and provokes such intrigue, that the wine industry has blossomed both quantitatively and qualitatively, while prices have dramatically increased over past decades. The modes of producing authentic high-quality wines have become part of the attractive story of wine, eliciting tours of the vineyards. Unfortunately most Americans are unaware of the beauty of the botanical regions which produce honey. Chris Hiatt commented that standing in the orange groves at

blossom time in northern California is to experience the most beautiful aroma in the world.

The farmers markets, as beekeepers consistently report, achieve price levels such as \$8/lb. and in fact much higher. We should remember that honey is a marvelous product of nature, but in the U.S. the per capita honey consumption is only a little more than 1.1 lb. per year. Since there is such a huge gap between input costs and retail costs, the retailers can keep prices relatively stable. Adulteration has created huge profits, but generally not for the retailers. As beekeepers have warned, flooding the market with low-quality adulterated honey will turn off consumers. Evidence of consumption declines have already emerged, which some correlate with the flood of cheap honey of questionable authenticity. This follows years of increasing total consumption, but steady per capita consumption. Such declines are exactly what beekeepers producing authentic honey have feared whenever they have contrasted the lovely honey they produce with the honey being sold on the mass market with fraudulent country of origin, botanical source and quality designations.

A new and serious form of food fraud has emerged which involves mislabeling of products as local which are not local, and in some cases as American, when the majority of the honey is not produced in the U.S. New scientific databases have been established and are being enhanced to allow correct and detailed identification in respect to both geographic and botanical sources.

The proposed USP FCC Honey Identity Standard states, "If a regional, territorial or topographical

origin of honey is listed on the label, the product must come entirely from the indicated place."

We note that some state agricultural organizations are encouraging beekeepers to use state designations on their retail honey products, whether sold in their own state or other states. Integrity is integral to marketing. In Europe, the marketing of honey by geographic and botanical origin has created a romantic appeal.

In July 2018, ABJ published an article which stated that the proper definition of authentic honey cannot be separated from the modes of production of honey. In November I wrote that the creative marketing of honey depends upon the elimination of adulterated honey and the prevalence of authentic, pure honey, to reflect honey's diversity and charm. The creative marketing of varieties, geographic origin and authentically local honey is comparable to the marketing of wines, coffees, teas, etc. Consumers' interest in the details of production of many agricultural products, including honey, is unprecedented. Furthermore, when honey is seen in its indirect role of contributing to global food security and ecological sustainability, the value of bees and beekeepers is seen more clearly.

U.S./ARGENTINA/BRAZIL/ CANADA

United States

It was reported that in July the clover bloom in the Dakotas was weak. Bismarck, North Dakota, set records for heat and the region suffered heavy winds. In 2019, the crop of North and South Dakota was 53 million lbs., representing 34% of total U.S. production. In terms of quantity, as of the latter part of July, the overall crop looks to be lower than average, and less than last year's crop. The total U.S. crop in 2019 was 157 million lbs.

Argentina

During the period January to June 2020, Argentina shipped about 92.5 million pounds (42,000 metric tons) of honey to the world out of a total crop of about 65,000 metric tons. Most of the remaining 23,000 tons are already sold. U.S. imports Jan-May were 32.5 million pounds, slightly more than the same period in 2019.

Prices have continued to rise from January to now, to levels over \$1.36/lb., without significant quantities to

be sold till next crop, normally available in February 2021. There is no white honey available in Argentina.

Brazil

U.S. imports from Brazil reached 3.9 million pounds for Jan-May, a significant increase compared to the same period in 2019. The prices dropped to astonishingly low levels of about \$1.05/lb. Reports indicate that only limited supplies of organic honey remain unsold as of July.

Canada

Canada's honey production is expected to be only 40,000 MT, down from their normal crop of 45,000 MT. Prices in May were reported at \$1.47/lb. for Extra Light Amber and in July were moving up, with demand increasing. Imports in the U.S. for Jan-May 2020 totaled 3.2 million pounds, down from 8 million over the same period in 2019. Total U.S. imports from Canada in 2019 were 15.9 million pounds.

Alberta is down over 50,000 hives from its normal of 300,000 to 320,000 hives and its production will be below normal. Beekeepers had to use flotation tires to get into the bee yards, which were extremely wet. Alberta had a long, extensive series of rains which washed away seeds and fertilizer and inhibited honey production. The extraordinary productivity of honey in Alberta has been subject to environmental pressures.

Manitoba had sweet clover setting seed already in July, earlier than normal, and some reports indicate 120 lbs. to 160 lbs. per hive. In western Canada beekeepers expect lower than normal crops and say that their bees do not have vigor this year. Canola in southern Canada started an earlier downward swing due to weather patterns.

The only sources of authentic honey with comparable flavor profiles to U.S. honey are Argentina and Canada. That is one reason honey prices rose in mid-July. There is a well-founded fear of a growing and long-term shortage of authentic honey. By mid-July higher prices were being offered and forward contracts being sought because of the growing fear that 1) prices will become much higher than current offers and 2) a real shortage of authentic honey is on the horizon. The experience of rising prices is like passing through the long tunnels running through the Austrian Alps.

Scientific Tools

It has become entirely impossible to keep NMR, HRMS and other methods of analysis out of the scientific toolbox. However, a concern remains to ensure that the tools are fully and properly used. Already, there have been statements which point to using the wrong tool for a given mode of adulteration and not fully, comprehensively using a given tool. Scientists are preparing an article which will address this issue in a technical but readable manner.

It is like a carpenter's toolbox; no one would ask a carpenter to build a house and expect him to use a saw to nail together the various wooden components, no less to use a hammer to size and shape those wooden constituents. Nor would anyone want a surgeon to use anything less than the most precise, advanced diagnostic and surgical instruments.

NMR can reveal country of origin, botanical source, region of origin, extraction of unripened honey, and the use of resin technology. Blatant arrogance has surrounded the introduction and promotion of resin technology (ion-exchange resins) for use in some Eastern countries. The FDA does not allow its use for products labeled "honey" and the USP Honey Identity Standard states "use of ion-exchange resins ... is not allowed." HRMS can reveal the blending of bio-engineered extraneous sweeteners.

In July 2020, the QSI laboratory in Germany offered to the international industry a protocol on how to use these advanced technologies advocated by both Apimondia and the USP for the confirmation of the authenticity of honey. Other laboratories in the U.S. and Canada will surely follow suit. The goal will be to see who can most faithfully, effectively and thoroughly implement these methodologies to protect consumers and beekeepers, and thereby broader agricultural and ecological interests.

Of course, we must note that the USP FCC document is a proposal and is open for comments prior to its finalization. This author, with the support of others, is advocating that the document should promote the authenticity of all honey, irrespective of the use to which the honey is put, whether for retail, manufacturing, food service, cosmetic or pharmaceutical purposes. Authentic honey must be authentic. If we leave a loophole, the flood of adulterated honey will be unabated and the negative consequences upon au-

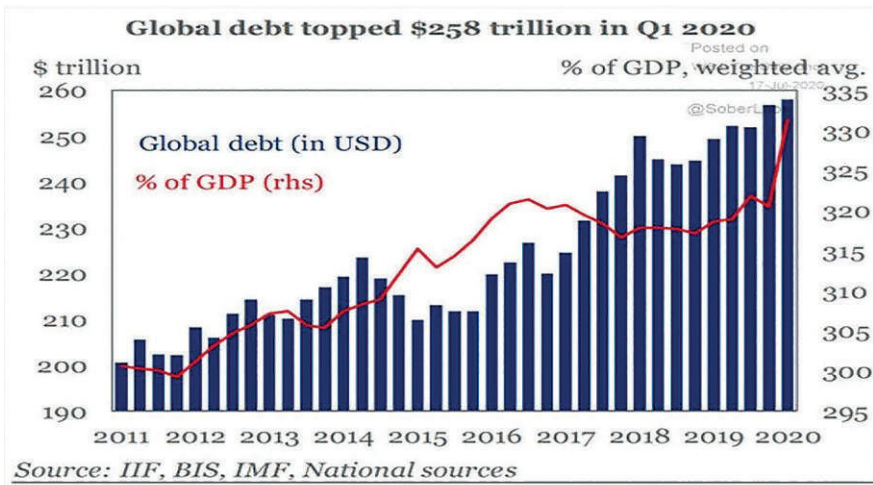
thentic honey will persist. It is a matter of principle. The back door should not be let open because the front door has been locked. This is vital for the health of the U.S. market.

All modes of adulteration relevant to the prevailing situation must be scientifically and independently investigated. Otherwise analysis serves merely as an exercise which provides a smokescreen or a mask.

We are happy to see that some of the laboratories are recognizing this. In a newsletter sent in July 2020, QSI asserted: "High Resolution Mass Spectrometry is increasingly being used to investigate the authenticity of food. The great advantage of this technique is the ability to detect even novel adulterations. This is necessary because adulterators are constantly learning and adapting their adulterations to the analytics currently available." Different laboratories are collaborating to cross verify the power and application of these multiple tools and their respective databases. The results of these collaborations are very promising.

The adoption of these new standards represents considerable scientific progress. Science does not stop. As we look to the future, the creative marketing of authentic honey, its romance, history, charm, diversity and health benefits, requires a much more vigorous and comprehensive traceability system. That means the advancement of the science of the chemistry and physics of honey will require the understanding of variables which influence that chemistry and physics. In work that was done some years ago with Dr. McLaughlin and Dr. Page of the FDA, and with discussions with Dr. Joseph Bowden, it was suggested that if we develop a database more robust and comprehensive than has been collected so far for honey, it will be possible to see whether the specific product named honey fits the specific, detailed, profile. One size does not fit all. This is not only relevant to issues of authenticity and purity but it also is relevant to assessing both the high quality and/or the health benefits of particular honeys. Such a scientific scheme will serve an emerging era of the creative marketing of honey.

Science continues and is not relevant only to identifying adulteration but to demonstrating honey's quality and benefits. That is, the further development of the science of honey will serve a positive agenda. For ex-



Global Debt July 2020

ample, Dr. Daberkow has pointed out that a study by the University of Queensland (Profs. M. Fletcher, N. Hungerford, and T. Smith) indicates that the meliponini bee produces honey which, as indigenous people have known, has important health benefits. Specifically the honeys contain up to 85% of the sugar trehalulose, which is important because it can inhibit diabetic processes. Understanding this health benefit was dependent upon scientific analysis.

The Pandemic

The current situation is deeply affected by the pandemic which emerged in the latter part of 2019 from Wuhan, China. While China had a severe lockdown internally, a million Chinese travelled to five continents. In a 3-4-month period, the coronavirus provoked a pandemic throughout the entire world. The epicenters within and among the nations were shifting. As of mid-July, the total number of cases in the world was 15 million, the number of deaths 700,000, and the countries with the highest number of cases were the U.S., Brazil, India, Russia, and Peru. The fear of a second and third wave remains.

This is a crisis that integrates health, economics, education and national and global debt. For example, U.S. debt has grown so that the total debt is \$79 trillion, including federal, corporate, consumer, muni and local. This means that there are increasing risks for companies around the world, including exporters and U.S. beekeepers, who need secure terms of sale in a climate of increasing economic fragility.

Given the high rate of unemployment and high rate of bankruptcies, the settlement of global debt creates

a daunting economic challenge to the nation and the world. The magnitude of international debt, given the impact of the pandemic on the global economy, has reached a point where international monetary authorities are talking about the necessity to "forgive" debt, which could include the enormous debt which many third world countries owe China for their new Silk Road projects.

Limited shipping availability and routes, delays in internal transportation in honey producing and consuming countries, the threat of recurring lockdowns, and diminishing hospital capacity, create great uncertainty for the world.

Climate

Aberrational weather patterns which have been reported this summer include temperatures over 100°F in the Arctic, melting permafrost in Siberia, extreme flooding in central and southern China, and protracted heat waves in 90% of North America.

CONCLUSION

The foxes are running away from the henhouses, the wolves are wearing Grandma's garb. There is the appearance that many Sauls suddenly became Pauls converted by the light on the road to Damascus.

Though the events described in the introductory sections have isolated those who for so long had dismissed, disparaged and denied the importance of NMR and other advanced scientific technologies, some continue to try to delay implementation of the protocols advocated by Apimondia, the Authorization Bill and the USP. The media, the government and the judicial system, along with the retailers and manufacturers who are becoming more acutely aware of their

Social Responsibilities to consumers, agriculture and the environment, are causing the Sea Change and the Inflection of Prices.

A series of podcasts is being organized to address the new challenges and opportunities during this period when economically motivated adulteration and food fraud are being confronted head on nationally and internationally, in both producing and consuming countries. The first podcast will involve Professor Michael Roberts and myself. Subsequent podcasts will engage scientists, representatives of other industries such as the wine industry, retail associations, consumer advocate associations, business leaders with expertise in exercising Corporate Social Responsibility, major media, and eminent legal experts in food fraud. The series is planned to run from August 2020 through 2021.

A new report by the Capgemini Research Foundation, "Consumer Products and Retail: How sustainability is fundamentally changing consumer preferences," finds that "sustainability has risen up the customer's agenda: 79% of consumers are changing their purchase preferences based on social responsibility, inclusiveness, or environmental impact." There is growing appreciation for beekeepers from people of all walks of life.

Honey cannot be defined without reference to its modes of production. Honey is not the product of blending rice and beet sugars and other bio-engineered sugars, nor is it the product of "laundering" honey through resin technology. Neither is honey the product of the extraction of immature, unripened nectars.

Honey is a product of nature which involves the complete interaction of pollinators and nectar, which transforms honey into The Soul of a Field of Flowers.

Mr. Phipps is President and founder of CPNA International, Ltd. He is a former member of the National Honey Board and Co-Chairman of the Committee for the Promotion of Honey and Health. He was a recipient of a National Science Foundation Fellowship in the Philosophy of Theoretical Physics. He was an Organizer of the 2020 Beethoven Festival by the CPI at the magnificent Planting Fields Arboretum. In 2017 he was appointed Vice President of the Apimondia Scientific Commission on Beekeeping Economy. He has worked with FDA to develop a research protocol for the global diversity of honey. e-mail: info@cpnaglobal.com