As readers of this blog well know, early modern Europe was aflood with recipes and drugs. One central question has long preoccupied many of us – just how did our historical actors assess, test and try out recipes, drugs and materia medica? A few summers ago, a group of historians of science and medicine gathered to discuss just this question. This month, we present our ideas and findings in a special issue of the Bulletin of the History of Medicine. To celebrate the launch of the special issue, several authors of the volume will share their work on The Recipes Project. Tuesday’s post revisited Ashley Buchanan and Tillmann Taape’s report on the original 2014 conference. Over the next few weeks, we’ll learn more about the research of Erik Heinrichs, Valentina Pugliano, Alisha Rankin and Justin Rivest. Finally, Tillmann Taape, who just completed his PhD at
the University Cambridge (congrats!) also adds his voice to the series by reflecting on how theme of drug testing features in his doctoral dissertation.

To get us started on our month of ‘Testing Drugs and Trying Cures’, we wanted to say a few words as the organizers and editors of the project. First, you might ask, what do we mean by ‘Testing Drugs and Trying Cures’? Over the course of the project, we found that it was useful to view ‘testing drugs’ and ‘trying cures’ as two overlapping but distinct phenomena.

As the essays in the special issue show, physicians and apothecaries developed clear rules and practices for testing drugs as materials – from sensory analysis of materia medica to chemical analysis of substances like mineral waters or alchemical medicines. This kind of ‘testing drugs’ largely focused on gaining knowledge on the substances’ medicinal properties and played a particularly significant role in the discovery and adoption of materia medica from the New World and in assessing and establishing authenticity of exotic and/or expensive medicaments.

‘Trying cures’, on the other hand, describes the widespread practice of trying remedies and other kinds of cures on human bodies. If ‘testing drugs’ was mainly conducted by learned physicians and apothecaries, ‘trying cures’ was performed by a broad range of healers. Within the home, women and men applied and observed the effects of remedies on family and household members. Likewise, physicians and other practitioners prescribed diets, medicines and other cures to their patients, again observing and recording the effects. Ample evidence of this kind of ‘trying cures’ survive in a range historical sources from the use of ‘probatum est’ to expressions of personal experience, customisation and rejection of recipes in household recipe collections (for more on this, see posts [here](#) and [here](#)).

For us, these two categories ‘testing drugs and ‘trying cures’ serve as helpful heuristic tools to untangle the assessment practices used by early modern practitioners. We see the two categories not as separate boxes but rather as overlapping and often intertwined practices. Many healers merged testing and trying by using patient tests to determine a substance’s properties or to refine methodologies in both drug production and application. These themes of testing and trying occupied a central place in the making of medical knowledge across a vast chronological span and broad geographical regions and social contexts. The essays in the special issue examine these crucial knowledge practices in Europe c. 1300-1800 (go [here](#) for a table of contents).
Several main themes emerged from this collaborative project. First, medicine was always an experiential art and the essays in the special issue demonstrate clear continuities between the learned physicians’ uses of experience/experiment in the Middle Ages and early modern experimental interests. Learned medicine made deliberate use of experience from a very early date and pharmacy was an area where the gathering of experiential knowledge was particularly pronounced. The senses – touch, taste, smell, sight and hearing – played vital roles in determining the properties of drugs and their effects on the human body.

Concurrently, as many essays in the volume demonstrate, structured drug testing had a long history. Medieval physicians developed meticulous rules for drug testing, as Michael McVaugh’s essay shows, although they left no record of actual medical trials. This focus on establishing protocols for drug testing continues throughout the medieval and early modern period, with significant expansion in scale and scope. By the eighteenth century, the testing of mineral spa waters (in Michael Bycroft’s essay) or proprietary drugs (in Justin Rivest’s essay) became large-scale undertakings situated in learned academies and hospitals.

When taken together, the essays in the ‘Testing Drugs and Trying Cures’ special issue collectively argue that ‘experimental thinking’ played a crucial role in learned assessments of medicine and drugs throughout the Middle Ages and early modern period. From the time of Galen, drug testing was structured and evidence-based with an aim to produce transferable results. For us, this fascinating and multifaceted story of premodern drug testing enriches and extends current histories of experimentation and we hope that our explorations into topic will inspire others to join us too!

Further Reading and Acknowledgements:

This post is a very condensed version of Elaine Leong and Alisha Rankin’s ‘Testing Drugs and Trying Cures: Experiment and Medicine in Medieval and Early Modern Europe’, Bulletin of the History of Medicine, 91 (2017), 157-182. The full version of the article is available here. The entire special issue is available here.

The ‘Testing Drugs and Trying Cures’ project was funded by the Max Planck Society as part of the Minerva Research Group’s ‘Reading and Writing Nature in Early Modern Europe’. We also extend our grateful thanks to all the participants of the 2014 workshop, the editors of the BHM and the anonymous reviewers of the articles in this special issue.
In September 2016, The Recipes Project celebrated its fourth birthday. We now have over 500 posts in our archives and over 120 pages for readers to sift through. That’s a lot of material! (And thank you so much to our contributors for sharing such a wealth of knowledge on recipes.) But with so much material on the site, it’s easy for earlier pieces to be forgotten. So, the editors have decided that, every now and then, we’ll pull something out of the archives to share with our readers anew.

Over the next few weeks, The Recipes Project will feature a selection of case studies from the current issue of the Bulletin of the History of Medicine on “Testing Drugs and Trying Cures”. This special issue grew out of a 2014 workshop held at Max Planck Institute for the History of Science in Berlin. We were very lucky to have two then graduate students Ashley Buchanan and Tillman Taape, join us for and grateful that they took the time to pen the post below. It seems fitting to begin this month on testing drugs and trying cures with a revisit to their post. Elaine (editor).

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By Ashley Buchanan and Tillman Taape

What did it mean to test a drug or try a cure in the early modern world? This was the central question for a group of scholars who gathered for a workshop at Max Planck Institute for the History of Science in Berlin, Germany. Since recipes emerged as one of the key themes throughout the workshop, and because the conference’s location in Berlin made it difficult for scholars outside of Europe to attend, we thought we might share a brief summary of the “Testing Drugs and Trying Cures” papers, in the hopes that we could bring the workshop’s key ideas and discussions to a larger audience. What emerged from an exhilarating two days of discussion and debate was the conclusion that historians of science and medicine should not privilege experiment and experimentation as fixed categories, but should understand the multiple ways in which physicians, apothecaries, artisans, institutions, and individuals in the early modern world tested, tried, investigated, experienced, modified, observed, and measured medicinal remedies and materiae medicae.

As written forms of medical and pharmaceutical knowledge and practice, recipes played an important part in the testing of drugs and cures, and our discussion raised larger questions surrounding the nature and purpose of an early modern recipe.
Michael McVaugh's paper opened the discussion by exploring how medieval physicians went about testing drugs. Learned doctors in the Middle Ages might appear helplessly hidebound, and inclined to follow ancient authorities over experimentation. In contrast, McVaugh showed how a group of Montpellier physicians in the fourteenth century established something of an experimental program. Medieval physicians, however, were not testing to find a cure, but to determine the quality, strength, and effectiveness of a drug as it pertained to a particular person's complexion. McVaugh underscored an important difference in the purpose of medieval drug testing. Physicians tested not for universal effectiveness, but to determine the quality of a drug – was it hot, cold, moist, or dry.

Although it became clear in our roundtable discussion that we should be wary of labeling such practices as obvious precursors to the experimental philosophies of the Scientific Revolution, many of the papers showed that the importance of specific tests resonated throughout the early modern period. Evan Ragland's paper, for example, traced the use of the phrase *periculum facere* ('to make a trial') in physicians' writings on medicine, anatomy and chemistry. Similarly, Michael Bycroft showed that French physicians and chemical experts of the Académie des Sciences became increasingly interested in the exact composition of mineral waters. Contrived
tests such as color indicators or the analysis of residues after evaporation increasingly became the touchstone of proper inquiry.

McVaugh, Ragland, and Bycroft’s papers all underscored the need to understand the specific nature and purpose of testing in each historical context. Continuing to emphasize the importance of historical context, Francesco Paulo de Ceglia’s paper showed just how different the purpose of testing could be in the context of seventeenth century blood miracles in the Kingdom of Naples. Catholics tested the liquefaction of the blood of their patron saint to explore the limits of nature. By discovering nature’s limits, you could then determine what was truly miraculous. Protestants, on the other hand, tested various materials and recipes to recreate the liquefaction of blood to cast doubt on the alleged miracle.

In the context of testing, drugs and cures are often under scrutiny in the form of recipes detailing their production and administration. While recipes emerged from many of the papers as very important forms of knowledge, it proved virtually impossible to define exactly what a recipe was. Recipes can be very short or very detailed, ranging from a mere list of ingredients to careful step-by-step instructions. If there is one thing recipes have in common, it is the need for testing, trying, modifying and adapting to different conditions. While constructing an all-encompassing definition of a recipe proved futile, all agreed that it was fruitful to understand recipes as an important genre in early modern science and medicine.

For her investigation on the testing practices of Venetian apothecaries, Valentina Pugliano emphasized the difference between experiment and experience. Venetian apothecaries were less concerned with testing drugs (in a traditional sense) than they were with the experience or truthfulness of their ingredients.
Testing by inspection, smell and taste was also important in this pharmaceutical context, to ensure that the ingredients were what the merchant had promised them to be, and not a cheap substitute with inferior properties. For Pugliano’s apothecaries, the important issue that required testing was the authenticity of the ingredients rather than the efficacy of the finished product; after all, most preparations had proved their worth since antiquity. Like McVaugh, Pugliano questioned traditional “Baconian” understandings of what it meant to experiment and test and argued for more nuanced notions of testing and trying, which included observing, measuring, evaluating, and experiencing.

With early modern Europeans’ increasing forays into the New World, however, more and more materiae medicae were found which were absent from ancient medical writings. Pliny and Dioscorides were silent on such substances as guaiacum wood, Peruvian bark or New World balsam, so their medicinal properties had to be newly investigated. Antonio Barrera-Osorio and Samir Boumediene’s papers added America, or the New World, into the discussion. Both emphasized the role of new drugs and materia medica in the rise of European experimental practices. New drugs and new medicinal recipes required new ways of testing.

Antonio Barrera-Osorio’s paper argued for an empirical culture in the Spanish empire, which was well suited to respond to these challenges. He showed how his protagonists gathered information about New World remedies from natives or travellers and experimented with ways of preparing them. Some of these drugs and recipes were deemed so important for the economy and health of the empire that the Spanish crown ordered tests in hospitals all over Castile. Samir Boumediene’s paper elaborated on the issue of making workable recipes for newly discovered drugs. Once more, taste and smell were important assays, but drugs such as guaiacum and Peruvian bark were also tested on a larger scale. Dispensing them to the poor inmates of charitable hospitals (as happened in France and Germany) helped to determine their effect, and to establish recipes, which indicated how to adjust the treatment in individual cases.
Gianna Pomata and Marta Hanson’s paper showed how recipes also functioned as vehicles of knowledge between different cultures. Recipes, as either formula or prescription, were both found in European and Chinese medical cultures. According to Pomata and Hanson, it was the familiar genre of the recipe that facilitated the transmission of Chinese pharmacology to Europe in the second half of the seventeenth century. Similarly, Carla Nappi argued that the Manchu medicinal recipes of the Qing court were spaces of encounter and medical translation in the early modern world. Pomata, Hanson, and Nappi demonstrated how the recipe served as the common ground between European and Chinese medicine and made the translation of Chinese pulse medicine and the transmission of Chinese materia medica possible in the seventeenth and eighteenth centuries.

Although recipes are difficult to characterize as a genre, it is clear that they are fascinating objects of historical study. More often than not, they are fluid rather than fixed forms of knowledge, requiring adaptation at every turn. They bring together ingredients, practices and often practitioners from all over the world, and themselves have a tendency to aggregate into larger collections. As written manifestations of gestures and processes, they play an important part in testing, assessing and modifying drugs and cures.
By Emma Spary and Justin Rivest

The project "Selling the Exotic in Paris and Versailles, 1670-1730", running in the Faculty of History at the University of Cambridge, and funded by Leverhulme Research Grant 2014-289, held its planned workshop in April this year. Its theme, "Consumers of the Exotic: European commerce and the consumption of exotic materia medica, 1670-1730", brought together a group of international scholars working on these questions in a broad variety of European contexts.

Our goal at the workshop was to produce a comparative picture of the ways in which exotic plant materials were processed, bought and consumed in Europe. Why did European consumers buy—and more significantly ingest—exotic plant materials? What did exoticism mean to them? While recent work has focused on colonial bioprospecting and the appropriation of indigenous knowledge, our aim was to investigate demand within Europe itself, exploring divergences and similarities across contexts. The choice of a restricted timespan—the decades around 1700—provided a baseline for comparison of drug production, sales and consumption in different cultures. Alexandra Cook (University of Hong Kong) kicked off the programme with a study of a proprietary drug, Garcin’s “Maduran pills”, sold around Europe in the early eighteenth century by an entrepreneur whose Protestant faith led to a complex intellectual and commercial itinerary. Cook argued that exotic ingredients were not necessarily a selling point for eighteenth-century patients. Harun Küçük (University of Pennsylvania) provoked us to think about the complexity of defining the exotic, and the importance of a multi-perspectival view of the history of drugs: Ottoman healers associated New World exotica like cinchona bark and ipecacuanha root with French medicine, since these substances often reached them via French commercial and intellectual networks. Continuing the global theme, Samir Boumediene explored the place of drugs in the missionary activities of the Society of Jesus. The decades around 1700 represented a decline in the relative importance of Jesuits in the global drug trade, as new players came to disrupt their initial privileged position.

Šebestián Kroupa (University of Cambridge) offered a counterpoint to the workshop’s focus on European consumption by exploring the supply of European drugs to transplanted European populations—Manila in the Philippines. European drugs were in fact imported in
large volumes to this “exotic” locale; little attention was paid to the pursuit of plant substances that might be commodified in the metropole, an exception being the Saint Ignatius bean. Victoria Pickering explored the diverse trajectories, contacts, and exchanges that were necessary to assemble the massive collection of exotic plant substances of Sir Hans Sloane.

Moving to early modern Russia, Clare Griffin suggested that its unique geographical connections—in the form of a land route between Europe and the Far East—led commentators to represent distant substances and peoples as subject to incorporation into the Empire, rather than “exotic” in the sense of “foreign”, as the case of rhubarb showed. Paula De Vos concluded the first day with an account of Palacios’ prominent 1706 pharmacopoeia. Early modern Western pharmacy was indebted, for its materia medica, to the Indo-Mediterranean world rather than the continent of Europe. The slow appropriation of new drugs spread outwards from this Indo-Mediterranean core to the Silk Roads, the Indian Ocean, and eventually the Atlantic world.

On day 2, Laia Portet explored the architecture of exoticism in printed French materia medica. Where familiar European plants tended to be classified alphabetically, unfamiliar exotics were classified by parts (roots, barks, leaves) since this was the form in which they entered the European marketplace. Emma Spary used a case history of an exotic aromatic, cinnamon, to point up the disjuncture between textual, material and empirical knowledge of drugs, a conundrum for medical experts, market regulators and individual consumers. Hjalmar Fors provocatively suggested that for early modern Europeans, “the exotic” primarily evoked traded material goods, including spices and drugs, rather than foreign peoples or distant geographies. Lack of knowledge about the places of origin of drugs was critical to a substance remaining “exotic” in European eyes.

Justin Rivest spoke of the encounter between political power, the emerging state and the large-scale administration of drugs in France, looking at how personal trialling of drugs by successive ministers of war led to a centrally administered programme of dispensing exotic drugs like tobacco, quinquina and ipecacuanha to French troops. In a very different take on the end-user, Wouter Klein introduced us to the uses of print culture as a research tool for relating newspaper advertising and ships’ cargoes of drugs in the Dutch republic after 1700.

Several common themes emerged from the papers. It seemed that “colonial bioprospecting” had its limits as a way of understanding European engagement with non-European materia medica. Most substances discussed did not reach Europe thanks to state intervention, but rather were trafficked by a heterogenous set of actors: missionaries, trading company officials, entrepreneurial merchants and court physicians. Many papers also showed that “exoticism” was not necessarily inherently desirable. A drug’s value was established through consensus-building over time. Furthermore, “exoticism” was a relative, context-specific category, subject to change, not solely a feature of geographic origin, or of a core-periphery relation between European metropoles and their colonies. The papers demonstrated that exoticism was also, perhaps
largely, a product of degrees of familiarity and unfamiliarity, which varied widely across different European contexts. In sum, rather than being inherently valuable objects of appropriation, exotic drugs were socially constructed goods.

By Amy L. Tigne

Making chocolate from bean to bar has become fashionable both in cottage industries, such as the delightful husband and wife shop, El Buen Cacaco, in Idyllwild, California that creates a wickedly hot Ghost Chocolate Bar made with bhut jolokia (aka ghost chili). In 2016, Carol Wiley listed 183 bean to bar chocolatiers on her website, but I would imagine there are even more artisanal chocolate businesses popping up every day.

Making chocolate in the classroom from “bean to drink” also seems to be gaining traction, as least in the early modern recipe world. Amanda Herbert posted her experiments with “teaching with chocolate tasting” which you can read here and John Kuhn and Marissa Nicosia talk about theirs here.

For my own part, I have been interested for several years in the historical aspects of chocolate as it made its way across the Atlantic, and in earlier blog posts, I have written about Hannah Woolley’s mid-seventeenth-century chocolate recipes in her printed cookbooks here and here. The most interesting recipe that I have come across is in the cookbook manuscript by Lady Ann Fanshawe (Wellcome MS 7113), who lived in Madrid in the 1660s as her husband was the English Ambassador to Spain. The recipe, dated 1665, is especially intriguing first because Fanshawe attached a drawing of a “chocelary potte” and a whisk or molinillo and secondly because it is entirely scratched out with large loops. One of my graduate students did quite a bit of transcription magic and was able to recover some of the recipe underneath and ever since that point, I had wanted to try to make the recipe.
Last fall I had the opportunity when I was teaching a senior seminar and graduate seminar on "Early Modern Women’s Writing and Literary Practice." The class was designed to incorporate as many material practices as possible as we were transcribing women’s letters and recipes from the seventeenth century. Early in the semester we had made ink, as I describe in this blog, but I really wanted to try to make chocolate from the bean, as Fanshawe had done. But because there were still some lacunae in the Fanshawe recipe I thought I had better consult one of her contemporaries, Penelope Jepson, who also has a chocolate recipe in her manuscript cookbook (Folger V.a. 396).

To make chocolato

Take a pound of the cacao nuts finely beaten or searsed, half a pound of hard sugar finely beaten or searsed, an ounce of cynamon, half an ounce of nutmeg, half an ounce aniseede, half a dram of long pepper, as much of Jamaica pepper. Beat and searse all those spices, then put in two stickes of vanillas beaten and searsed (two drachms of Achiote beaten and searsed) with ambergrise as you like to taste. When all those are pounded and well mixt, roast them in an earthen pan till they are as hot as you can endure with finger in it. Keep it well stirred that it burn not then put it into a mortar and beat it very fast till it begin to oile, so as it will work like paste, then make into paste.

As class time was limited, I did most of the preparation beforehand and was struck by how much labor was involved, especially peeling away the outer shell of the cacao after it is roasted. About 2 months in advance, I researched fair trade beans and bought them from Santa Barbara Chocolate. Jepson’s recipe has quite a few spices, most of which are familiar, except perhaps the achiote and the ambergris. I was able to locate the achiote in a Fiesta Supermercado, which are fairly common in Texas, but I left out the ambergris, which is incredible expensive, since it is used in perfume, and a little bit gross, as it is a secretion from the bile duct of sperm whales. I also bought a traditional Mexican molinillo and chocolate pot, which looked quite amazingly similar to Ann Fanshawe’s drawing.
To facilitate easy recipe assembly, I pre-ground all the spices and the chocolate separately (and I cheated by using a spice grinder). On the day of the class, students combined the various ingredients to make the chocolate mix, and then one student rolled the molinillo in the ceramic chocolate between their hands as another student poured in boiling water.

Though Fanshawe’s recipe specifies china cups, students brought their favorite coffee mug from which to drink their chocolate. Students were surprised by the grainy texture, the bitter taste, and its wateriness, but they tended to like the spicy flavor (perhaps because we are in Texas and Mexican spices are ubiquitous here). We discussed how industrialization and global trade has influenced and changed our taste in the last 400 years. In the words of one student, “I really enjoyed the smell of the cocoa beans and the drink itself, but it was difficult to believe that there was half a pound of sugar in it. Like we mentioned in class, people really like sugar.”

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Posts about early modern science written by Katherine. Perhaps most surprising was the Royal Society’s involvement in contemporary debates as to how modern music measured up to the standard of the music of the ancient world, and the wondrous effects described in classical mythology. Experimental Robert Hooke suggested that ancient myths might point to truths about the natural world. Early modern times.