IDEM sees further growth in 2014

More innovations and educational offers available for Asian dentists at upcoming Singapore dental show

Daniel Zimmermann
DTI

SINGAPORE: The International Dental Exhibition and Meeting (IDEM) in Singapore is fast becoming a crucial meeting point for the dental profession in Asia. The latest registration figures released by the organiser, Koelnmesse, a few weeks before the show indicate that the upcoming edition in April will see 20 to 30 per cent more exhibitors showcasing their products and solutions to a professional audience.

Owing to the high interest shown by the industry, the total exhibition space has been extended by 30 per cent and now covers 10,000 sqm in two halls at the recently renovated Suntec Singapore Convention and Exhibition Centre, where the show is going to be held from 4 to 6 April. In addition to a large number of dental products and solutions, of which many will be launched in Asian markets for the first time, visitors will be able to learn about the newest methods and technologies in dentistry during a three-day clinical conference that runs parallel to the industry showcase on Levels 3 and 4. Several events tailored to issues relevant to young dentists, dental technicians and hygienists will also be offered during the show.

IDEM 2014 will see more exhibitors and visitors. (DTI/Photo courtesy Koelnmesse, Singapore)

BPA delays healing

A new study from the University of Melbourne’s Dental School in Australia has confirmed that delayed healing after dental surgery and subsequent jaw osteonecrosis can be induced by the use of bisphosphonates, a class of drugs commonly used to treat bone diseases such as osteoporosis.

Dental acquisition

Q & M Dental Group from Singapore has recently upped its share in Chinese dental products maker Quinhuangdao Adtrie High Technical Ceramic Co Ltd. from 51 per cent to 100 per cent. The transaction, worth $816 million (US$91 million), is subject to approval by Chinese and Singapore regulators.

Malaysia is top in health care

Health care in Malaysia ranks among the best in the world, the annual Global Retirement Index by International Living, a US publishing group specialising on travelling and living abroad, has revealed.

According to the report, health care services provided by medical professionals in the South-East Asian country do not just equal Western standards but are also highly affordable, which makes it a popular destination for medical tourists.

Only France and Uruguay scored better in terms of quality and affordable healthcare. Published since 1991, the index evaluates the best retirement havens worldwide in such terms as cost of living or infrastructure.

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World Oral Health Day celebrated in Asia

Series of promotional events to be held throughout the continent on 20 March

DT Asia Pacific

HONG KONG, KUALA LUMPUR, Malaysia & GENEVA, Switzerland: Numerous dental associations in Asia have begun preparations for World Oral Health Day (WOHD) this year, which is to be celebrated on 20 March, to promote the benefits of good oral health and hygiene worldwide. Among a number of public awareness campaigns and sponsored oral health-related events, the Malaysian Dental Association has announced its intent to break the Guinness World Record for the most people brushing their teeth at the same time at a public gathering in Kuala Lumpur. The record was previously held by the city of San Salvador, which saw more than 13,000 people brushing their teeth simultaneously in 2005.

In addition, a number of dental festivals throughout the continent will be offering free oral health checks and demonstrations that day. In Malaysia, Thailand and India particularly, the national dental associations will provide oral health promotion materials and products, such as toothbrushes and toothpaste, to schools and facilities for the underprivileged. Issues of oral health will be discussed with schoolchildren in Myanmar by the President of the FDI World Dental Federation, Dr. Tin Chun Wong, and the CEO of personal care products manufacturer Unilever, Paul Polman, over Google's instant messaging and video chat platform Hangouts. Events promoting oral health will also be held in several Asian dental schools, including the University of Hong Kong's Faculty of Dentistry, which recently announced that it will be holding an oral health exhibition at the Prince Philip Dental Hospital to teach citizens how to floss and brush their teeth properly.

People in Asia will also be able to obtain oral health information online through several campaigns running on social media platforms like Facebook and websites developed especially for WOHD.

Over 50 countries are celebrating WOHD with oral-health-themed activities this year. Initiated in partnership with the American Dental Association, WOHD has been held annually since 2008. Previously celebrated on 12 September in honour of FDI founder Dr Charles Goding, it was decided last year to move it to 20 March. The organisation provides information about the event and all related activities on its WOHD website, where dental stakeholders can also download a toolkit to help them in planning their own WOHD activities.

Dental Federation, Dr Tin Chun Wong, and the CEO of personal care products manufacturer Unilever, Paul Polman, over Google's instant messaging and video chat platform Hangouts. Events promoting oral health will also be held in several Asian dental schools, including the University of Hong Kong's Faculty of Dentistry, which recently announced that it will be holding an oral health exhibition at the Prince Philip Dental Hospital to teach citizens how to floss and brush their teeth properly.
Researchers warn of magnetic fields from dental devices

NIIGATA, Japan/SINGAPORE: Low-frequency electromagnetic fields produced by common dental devices, such as electric toothbrushes and curing lights, are a potential threat to human health, researchers from the Nippon Dental University in Niigata in Japan have reported. In a test, the results of which were published recently in the Journal of Electrical and Electronic Systems in the US, they found that such devices induced significant electric currents not only in several metallic intra-oral appliances but also in teeth.

While the effects of these currents, particularly in the long term, remain largely unknown, they have been proved to play a role in the development of systemic conditions, such as leukaemia and tumours of the central nervous system, the researchers said. Inside the mouth, they can lead to the corrosion of metallic appliances, promoting metal allergies and causing discomfort for the patient. Exposure to these devices in patients has to be eliminated or reduced through the introduction of new safety standards or improvements in current technology, among other measures, they asserted.

The researchers measured the electric currents induced by magnetic fields that were produced by five commercially available electric toothbrushes and three curing lights within the 1 to 2,000 Hz range using a multimeter. Currents were detected in dental appliances made of various metals, with zirconia brackets most likely to induce currents, as well as human hard tissue.

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DT Asia Pacific
Dear reader, 

It is fair to say that the “gold rush” in dentistry has been over for a long time. Even since the world market price for the precious metal has skyrocketed during the 2000s, it has become more lucrative for many to get the gold from fillings out than to actually get it in.

Subsequently, the market for dental gold has crashed, particularly in countries, where state-of-the-art materials like composites or ceramics have now become the norm. With the ongoing development and refinement of these materials, it can be assumed that the hours of the world’s oldest filling material are finally counted.

In Asia, however, gold will stick around for a while, if not for the reason of being used as a filling material. According to reports by environmental groups, dentists working in small scale gold mining areas in the Philippines have partnered with miners to trade gold in form of dental amalgam for gold, a practice which significantly adds to the country’s already serious mercury waste problem.

This practice has been commonplace for decades and has developed into a lucrative business, particularly for the dental profession, as amalgam is easy to import and trade in the country owing to lax regulations. While there have been initiatives to make miners comply more with waste management standards, there have been no interventions against the dental professions for this practice so far.

As one of the few Asian countries to have signed the Minamata Convention for a global phase-out of mercury, the Philippines have committed themselves to a better control of their hazardous output. With dentists unconventionally contributing to the problem, it looks like the country has a long way to go to fulfill its promises.

Yours sincerely,
Daniel Zimmermann
Group Editor
Dental Tribune International

Dental Tribune welcomes comments, suggestions and complaints at newsroom@dental-tribune.com.

For quick access to our contact form you may also scan the following QR code.

“…I suppose we are done here.”

Dr Scott D. Ganz
USA

I was first exposed to the world of 3-D imaging for dental applications in 1985. At that time, when patients had severely resorbed ridges, and root form implants were just becoming accepted in the US market, subperiosteal implants were a recommended treatment alternative. Conventional subperiosteal implants required two separate surgical procedures, the first for an impression of the alveolar/basal bone for the fabrication of the implant, and the second for the placement of the implant.

Each surgical intervention required an invasive and extensive flap to expose the underlying bone. With the inception of CT, a scan of a patient’s jawbone created a 3-D dataset that would allow for the fabrication of a physical resin-based medical model. From this model, the subperiosteal implant could be designed and fabricated, circumventing the need for the first surgical procedure reducing patient morbidity by 50 percent.

Of course, the slice thickness and resolution did not result in a high degree of accuracy, and often the implants did not fit office devices provided a significant catalyst for the dental industry to allow for instant access to the technology.

Three-dimensional imaging modalities have truly empowered clinicians with an increased visual acuity of individual aspects of patient anatomy for a wide variety of dental applications. These include but may not be limited to oral surgery procedures, orthodontics, periodontology, endodontics, temporomandibular joint disorders, bone grafting, sleep apnea, dental implant placement, and reconstruction. The utilisation of CBCT data has been further expanded and augmented with the ability to merge/superimpose cross-platform data from intra-oral and optical scanners for increased diagnostics and to create a direct link to CAD/CAM.

We have come a long way since 1985, but not far enough in my humble opinion. I truly believe that every dental school should not only have a CBCT imaging device, but also be actively integrating the technology into the undergraduate and graduate curriculum, teaching clinicians how to utilise these most powerful tools to provide our patients with the best possible care but without the guess work.

The evolution continues within the pages of our new come beam international magazine. We will do our best to provide our readers with useful information by presenting a variety of clinical applications and state-of-the-art concepts that showcase CBCT technology and related applications. It is time to realize that there is a real danger when we are bound by 2-D concepts, and clearly today we live in a 3-D world. And, as Sir William Osler stated, “What the brain does not know, the eye cannot see.”

We have come a long way since 1985...”

Dr Jukka Pekka Matinlinna
Hong Kong

The use of gold and gold alloys has a long tradition in the practice of dentistry. Gold-based restorations, such as crowns, inlays and onlays, have excellent biomechanical properties. However, as they do not corrode and wear at the same rate as vital teeth, the aesthetics has been considered acceptable compared with certain other metal alloy restorations for amalgam fillings. Gold alloys have also been used for the framework in porcelain-fused-to metal restorations.

One of their shortcomings is their poor aesthetics in gingival regions, as well as in anterior teeth restorations, in particular, and their use is declining, as more aesthetic and low-priced options gain popularity. Such restoration systems for full bridges, short bridges, crowns, dental implants, etc. are all-ceramic (zirconia layered with dental porcelain) and fibre-reinforced composite restorations.

Contemporary prosthetic materials include metals/ alloys, ceramics, polymers, and resin composites (with or without fibre reinforcement). Their clinical selection depends heavily on the training, aptitude and experience of the dentist. Owing to the increase in dental treatment options, of which some are becoming increasingly competitive, it is expected that gold-based restorations will be used increasingly less on a global scale.

It is not a great surprise that strongly developing economies in Asia invest in gold dental material more than stagnating economies do, such as the USA and the EU, at least, because in those economies gold-based prosthetic restorations are often considered a sign of prosperity and a personal financial investment. Their use however will diminish owing to the world market price of gold (and certain other precious metals) and their aesthetic shortcomings. Bearing in mind that they may have some clinical problems that are not yet fully resolved, all-ceramic and fibre-reinforced composites are expected to dominate in dental restorations worldwide.

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Edelweiss precured composite veneers are laser sintered, giving them better durability and scratch resistance. Combining this proprietary technology with affordability, Edelweiss unlocks the opportunity for dentists to give more patients the long-lasting, esthetic smiles they’ve always wanted—at a price they can afford.

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Visit ultradent.com/edelweissvideo or scan the QR code with your smartphone to see a video about Edelweiss composite veneers.
UK authorities issue warning over buying dental devices online

LONDON, UK: The Medicines and Healthcare products Regulatory Agency (MHRA), the health authority that regulates all medical devices across the UK, has warned dentists not to purchase dental devices from the Internet. The alert was published after a counterfeit dental drill shattered while being used on a patient.

According to the MHRA, the number of counterfeit and non-CE-marked dental products sold online has risen significantly in recent years. The medical device CE mark, which is mandatory for certain products sold within the European Economic Area, signifies compliance with the essential safety requirements defined in the European medical device regulations. Devices that do not bear a legitimate CE mark may not have been tested for safety and could fail during use, risking injury to patients and users.

However, counterfeit dental medical devices can be difficult to distinguish from genuine devices.

Since 2012, the MHRA has issued a number of warnings about medical devices that could cause serious harm to patients, including alerts about counterfeit dental X-ray machines that emitted harmful levels of radiation and counterfeit dental curing lights that could result in poor quality fillings.

A list of legitimate sources for dental devices can be found on the British Dental Industry Association’s website.

Teeth found in boy’s head

BALTIMORE, USA: Brain surgeons in the US have found multiple fully formed teeth inside a tumor mass that was growing in the centre of the brain of a 4-month-old child. The boy was initially admitted to a clinic in Baltimore after a routine paediatric visit owing to an increasing head circumference.

According to the case report, which was published online on Feb. 27 in the New England Journal of Medicine, the child underwent MRI of the brain after admission to the Johns Hopkins Children’s Center, which revealed a mass (4.1 cm × 4.0 cm × 3.5 cm) close to the hypothalamus. The doctors also identified structures near the mass similar to those of teeth in the mandible.

Upon surgical removal of the tumour, the surgeons found a number of teeth inside the mass, which was later identified as an adamantinomatous craniopharyngioma on pathological examination. Such slow-growing tumours arise from Rathke’s pouch, an embryonic precursor to the anterior pituitary, and consist of stratified squamous epithelium and wet keratin, and may be cystic. The cysts are filled with viscous yellow fluid containing cholesterol crystals. The doctors explained that histologically adamantinomatous craniopharyngiomas closely resemble some odontogenic tumours.

The surgery was performed about a year ago. According to the case report, since then the patient has required shunting for bilateral subdural hygromas, and received thyroid and adrenal hormone-replacement therapy. However, he is making good developmental progress and undergoes MRI regularly, the doctors said.
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Survey finds crucial role of schools in promoting oral health

Although dental caries rates among children have declined in several high-income countries over the last decades, the opposite trend has been noted for low-income countries. A survey conducted at the University of Copenhagen has shown, however, that school programmes can contribute significantly to a gradual reduction of inequalities in dental health.

Gingivitis and dental caries are the most common oral diseases among children, with the latter affecting 60–90 per cent of children globally. Pain and discomfort resulting from these diseases can compromise children’s concentration and their participation in school, thereby denying them the full benefit of schooling.

Through analysis of data from the World Health Organization’s Global School Health Initiative, a programme that was launched in 1995 in 61 countries to improve the health of students and other members of the community through schools, the researchers observed that about 60 per cent of the countries give formalised instruction on how to brush teeth.

However, not all countries have access to clean water and the necessary sanitary conditions, which constitutes a major challenge for the health and school authorities in Asia, Latin America and Africa in particular. “In addition, countries in these regions are battling problems involving the sale of sugary drinks and sweets in the school playgrounds, which is often a source of extra income for school teachers, who are poorly paid,” explained Dr Poul Erik Petersen, Chief of the WHO’s Global Oral Health Programme and a professor at the University of Copenhagen.

Petersen further pointed out that the greatest challenges to improving dental health in low-income countries are the lack of financial resources and trained staff. Additionally, they make only limited use of fluoride.

Overall, the survey showed that schools have a central role in promoting health and preventing diseases because healthy school environments that offer children education on dental health are generally well placed to set children on a path to a healthy lifestyle throughout their lives, Petersen explained.

Dental health inequalities may also arise in high-income countries. “Even in a rich country like Denmark, we see social inequalities in dental care. The socially and financially disadvantaged groups of the population show a high incidence of tooth and mouth complaints compared with the more affluent groups,” he added.

The study, titled “Promoting oral health of children through schools—Results from a WHO global survey 2012”, was published in the December issue of the Community Dental Health journal.
Ultradent enhances tooth whitening with Opalescence Go

KUALA LUMPUR, Malaysia: Opalescence Go from Ultradent is a tooth-whitening treatment option that according to the company is perfect for travel, top-ups and quick starts. It is also intended to complement other tooth-whitening and stain-removing procedures that have been performed in dental practice.

The hydrogen peroxide formula of Opalescence Go’s whitening gel is available in concentrations of 10 per cent and 15 per cent and in three flavours. It is delivered in a novel tray that customises its form in the mouth owing to heat-activated polymers. Besides having the benefit of a more comfortable fit, this improved adaption is intended to ensure that the maximum amount of gel remains in contact with the teeth during whitening.

Optimal gel quantity allows easy clean-up after the procedure, the company said. In order to reduce dental caries and tooth sensitivity, the gel also contains potassium nitrate and fluoride.

According to Ultradent, Opalescence Go combines everything that is current in whitening with simple application, as the pre-filled trays can be conveniently used right out of the package. The company provides a wide range of patient literature, posters, whitening menus and images for helping dentists to market whitening treatments and services to their patients.

Being at the forefront of the development of safe and controlled tooth-whitening products, Ultradent claims to be recognised throughout the world as a trademark of quality and reliability in dentistry. In addition to tooth-whitening products, the company manufactures and distributes an extended portfolio of dental materials, instruments and equipment.

Decline of dental gold production continues
Predications by World Gold Council see less demand for precious metal restorations worldwide

LONDON, UK: The use of gold in dental applications declined further in 2015. According to provisional figures released by the World Gold Council in London in February, between 5 and 4 per cent less of the precious material was used in dentistry last year compared with 2012.

Globally, a total of 57.3 tons of gold was used by the profession in the last 12 months, with dentists in Japan and the US remaining the two top consumers. In a statement, the council said that the drop in sales is due to the high price of precious metals on the world market and the continuation of the long-term trend away from gold cast alloys to cheaper alternatives, like ceramics.

“Although not all clinical problems linked to all-ceramic and fibre-reinforced composites have been resolved, these materials are poised to become the material of choice for dental restorations worldwide. As more aesthetic and less expensive treatment options are gaining popularity, the use of gold in dentistry will continue to decrease,” Dr Jukka Pekka Matinlinna, Associate Professor of Dental Materials Science at the University of Hong Kong, commented the figures.

Fabrication of dental gold peaked in 2004, when more than 67 tons was used in dentistry worldwide. Since then, the material has seen a rapid decline, particularly in developed markets like the US. Figures from a Thomson Reuters report indicate that demand there almost halved in 2012 compared with what was produced in the country almost a decade ago. Germany, still the third-largest consumer of dental gold in 2005, only put slightly over 2 tons on the market in 2012, a fragment of the 12.9 tons the country was using ten years earlier.

Demand has also plummeted in South Korea and Italy, two of the other top five consumers of dental gold. With 19 tons a year, Japan currently remains the largest user owing to the subsidisation of kinpala 12, a popular gold-palladium dental alloy, by the Japanese government.

With the first records of its use dating back to AD 200, gold is one of the oldest materials used by man to fill decayed teeth. It is still popular among many dentists owing to its high durability and biocompatibility, which makes it suitable for patients allergic to other metal-based restorative materials, such as amalgam. Poor aesthetics in gingival regions and anterior tooth restorations, however, have limited its range of applications.

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Glass ionomer filling cement
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• also available as application capsules

Dental desensitising varnish
• treatment of hypersensitive dentine
• fast desensitisation
• fluoride release
• easy and fast application
Outpacing growth in our international business

An interview with Julie Tay, Vice-President Asia Pacific at Align Technology

Dental Tribune: Your company changed its distribution in the Asia Pacific region to a direct sales model last year. How has the transition turned out so far in terms of organisation and finances?

Julie Tay: In the past, Japan and China were our only direct sales markets in Asia. In May 2015, we successfully completed the transition of our four largest indirect country markets, Australia, New Zealand, Hong Kong and Singapore, from our APAC distributor back to direct sales and management by Align. This geographical distribution of countries probably represents the best global growth opportunities for Align Technology over the next three to five years. The transition has been smooth and we have continued to see strong organic growth for Invisalign in the APAC region. From the results from the last quarter of 2015, you can see that the total sales volume in Asia grew over 50 per cent annually. We now have a strong leadership team managing the business in each country.

We now realise direct sales about full Invisalign average sales price (ASP), rather than the discounted ASP under the distribution agreement. This means that the roughly 5 per cent of worldwide revenue for which Asia Pacific accounts will become an even more meaningful contributor to top line growth.

Other APAC markets, like South Korea and the Philippines, are still operating under a distribution model. What makes these markets currently not suitable for direct sales, and do you have any plans to change to direct sales there?

Align continues to assess different markets and to work closely with our partners to provide the best possible service to both patients and doctors.

Sales in Asia contributed only 2 to 2.5 per cent of Align’s worldwide revenue in 2012. Was this the main reason for the change to your sales structure in that region?

This region presents a huge opportunity for Align. We want to provide doctors and patients with more options for a beautiful, healthy smile. There are actually many doctors who wanted to offer Invisalign and are glad that we now have a direct presence in many APAC countries.

You reported strong growth in the Asia Pacific region in the last quarter of 2015. Is this solely a result of the transition or were there other developments at play?

Our strong annual volume growth reflects continued progress and execution of our strategic growth drivers across Asia Pacific. As the region came together, the APAC leadership team deployed key strategies in specific markets. We also invested heavily in people, doctor training and patient programmes to develop the markets further.

You are doing particularly well in China and Japan. Are these the most important markets for Invisalign right now?

The APAC region in general has been the fastest-growing region for us but within Asia China and Japan are currently the most important markets for Invisalign. Both countries share similarities, but they are also very different. What we see are the most complex cases, such as Class II, Class III, extraction, open bite, etc. That might be where the similarities end.

What we see as the particular challenge of orthodontic treatment.

Despite a population of 120 million, there are relatively small number of orthodontic practitioners in Japan: only an estimated 5,000 to 4,000. Practitioners there tend to be conservative and want to see sufficient clinical results on Japanese patients, which because of the severity of the malocclusion can take up to two to three years. All of these factors led to a slow start, but in the past two years, our business has grown well above our overall rate. We have been successful in building up clinical confidence through a pro-active marketing approach, which includes educating consumers about clear aligner therapy and the importance of having a beautiful smile.

In Japan, orthodontics is primarily performed in institutional settings. A rising middle-class is accumulating disposable income for these kinds of treatments and they appear to be more open to technology and modern approaches to the treatment of malocclusion. We believe that China is the one market worldwide that has the potential to be as large as the US over the next ten years in terms of orthodontic treatment.

Particularly in Asia, Western dental manufacturers have to face increased competition from local providers offering similar products at lower costs (e.g. dental implants). Is the situation in your market comparable?

We believe we have a strong branch with which we are able to differentiate ourselves from the competition in key areas. The science and technology behind our products, our ability to develop total solutions for malocclusion, such as the recent introduction of Invisalign G5 for deep bite, and our proprietary SmartTrack aligner material are significant barriers to others seeking to enter the market.

Invisalign Teen has gained a significant market share since it was introduced in 2008. With demographic expansion in most Asian countries (e.g. young age distribution), what prospects does this product have there?

The teen segment represents the largest portion of the orthodontic market and continues to be very important to Align. We believe the prospect is huge, especially in certain countries, and we intend to make Invisalign the product of choice for leading doctors.

You have worked in the health business before. What do you see as the particular challenges of the dental market?

“...China is the one market worldwide that has the potential to be as large as the US...”

The technology is moving so fast that doctors may not even realise it when it has arrived. In addition, increasing patient demands and sophistication are going to change the doctor–patient relationship.

What general prospects do you see for your company in Asia for the years to come?

We expect growth rates across the entire Asia Pacific region to continue outpacing growth in our international business. This is a very exciting time for Align and our prospects in this region are very positive. We are the clear leader in a huge underpenetrated market with a high level of clinical skill in Australia, New Zealand and Hong Kong, for example. Increasing consumer sophistication in China and hence demand for Invisalign, large untapped segments in Japan and developing markets such as South-East Asia all offer a strong growth trajectory for Align across the region.

Thank you very much for the interview.
A-dec receives more awards for dental products

NEWBERG, Ore., USA: For the tenth consecutive year, A-dec has won the Townie Choice awards in the categories Best Patient Chairs, Best Operatory Delivery Systems, Best Dental Cabinetry, Best Operatory Lights, Best Stools and Best Waterline Systems. Considered the dentist’s choice for dental products and services, the winners are voted for annually by dental professionals who subscribe to the DentalTown magazine or are registered users of its website.

Established by Dr Howard Farran and Farran Media as a resource to help dentists make informed purchasing decisions, the Townie acclaim is an indication of manufacturing innovation, leadership and product reliability.

Every year since DentalTown’s first Townie Choice awards in 2003, doctors have voted A-dec best in class across multiple dental equipment categories. Of A-dec’s six category wins this year, all but Best Dental Cabinetry began in 2005.

According to A-dec, its chairs and delivery systems are central to the company’s A-dec 500, A-dec 400 and A-dec 300 product lines. The award for the A-dec LED dental light adds to the light’s growing list of accolades, which include THE DENTAL ADVISOR’s coveted Editors’ Choice award, an IHA Silver from the Industrial Designers Society of America, the international Red Dot Design Award, and 2012 Best New Product for Women voted by the American Association of Women Dentists, the company said.

In the dental cabinetry category, the A-dec Preference Collection also received the Townie Choice, as did the A-dec doctor’s stool and A-dec ICX for waterline maintenance.

Sirona partners with Japanese GC corporation

TOKYO, Japan/BENSHEIM, Germany: Sirona, a global provider of dental technology, has signed a co-operation agreement with GC. The Japanese dental company will produce CAD/CAM blocks from composite or restorative materials for Sirona’s CEREC and InLab. GC Corporation complements the group of selected partner companies manufacturing high-performance materials for the milling of CAD/CAM Restorations, including VITA Zahnfabrik, Ivoclar Vivadent, Merz Dental, DENTSPLY and 3M ESPE.

GC produces consumables, equipment and facilities for dental practices and dental laboratories. Headquartered in Tokyo, it has become a global leader in glass ionomers, composites, ceramic layering and adhesive systems.

“GC is a prestigious dental company with a focus on Japan and other Asian markets. Since these markets are becoming increasingly important for our CAD/CAM business, we are pleased to have a material partner in the region that meets our high quality standards,” said Dr Joachim Pfeiffer, Vice-President of CAD/CAM Systems at Sirona.

Japan is one of the largest growth markets for CAD/CAM restorations and prostheses. The country is already very well prepared for the change to CAD/CAM technology. Thus, innovative dental technology combined with high-quality materials is increasingly in demand by dentists, Sirona stated.
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The pinnacle of prosthetics
Recreating smile characteristics in dental restorations

Hans-Joachim Lotz
Germany

Our mouths do not have a biological function only. People respond to the way we use our mouths in a variety of ways. When we show our teeth, we reveal something about ourselves. When we smile, we show emotions.

The main task of every dental technician is to recreate the functional and anatomical characteristics of the teeth and their surrounding tissue. But what about the patient’s individual facial characteristics? This case report describes the case of an edentulous female patient who underwent a customised aesthetic restoration. Finding a balance between a high smile line, an extremely low mandibular vertical dimension and limited vertical space in the maxilla was the main challenge here (Figs. 1a & b).

The patient wanted to have her edentulous maxilla and mandible restored. At first sight, a high smile line and the short length of the upper lip were evident. The bone of the mandible showed signs of severe atrophy and the maxillary alveolar bone appeared to be unduly large by comparison. When determining a treatment plan that could meet the patient’s individual needs best, the clinical team first explained to her what a fixed prosthesis would be like and how it could achieve good restorative aesthetics. The goal was to find an aesthetically balanced smile and natural gingiva for a natural blend. Here, the lack of alveolar height proved to be a problem again because the maxillary restoration could not be designed to extend to the gingival fold.

So what other options were available? After the models had been transferred to the articulator, a mock-up was created and tried in to visualise the prospective results (Figs. 2a-d). Tooth-coloured material made of polyurethane was used to avoid the patient being distracted by an unnatural tooth colour. With the mock-up in the patient’s mouth, the clinical team was able to clarify all contingencies, whilst taking aesthetic preferences, function and phonetic aspects into account. At the mock-up stage, the following objective and subjective characteristics were assessed:

- Has the facial plane been faithfully transferred to the dentures (occlusal plane)?
- How do the maxilla and mandible relate to one another (vertical bite relationship)?
- Has a harmonious balance between pink and white aesthetics been achieved?
- Are pink and white aesthetics harmoniously balanced?
- How much white is possible and how much pink is necessary to ensure an aesthetically harmonious smile?
- Is the patient capable of articulating speech clearly (phonetics)?
- What are the patient’s feelings regarding the restoration and can she identify with it?
- Does she have any additional requirements or requests for adjustments?

In a rather tricky case like this, accurate groundwork requires time and a detailed analysis of the initial situation. For the maxilla, we decided to manufacture a telescopic bridge veneered with a laboratory composite. Additional locking components were required however owing to the lack in vertical height.

The sliding friction of the telescopes alone would not have kept the denture in place tightly.

In the mandible, a bar-retained prosthesis was indicated. Aesthetic veneering with a composite was also the method of choice here. In order to achieve lasting friction, attachments (CEKA PRECI-LINE, ALPHADENT) were used with the bar construction. As the existing bone was used for the setting of the implants, they were not ideally distributed over the entire alveolar ridge. Additionally, the extreme bite height appeared to pose difficulties to some degree. Physical stability undermined by leverage forces was another concern.

After we decided on the design of the superstructure, we duplicated the mock-up in a transparent flask (Figs. 1a & b). This method allowed us to retain all the specifications that we had worked out thus far. Utilising transparent duplicating silicone is essential to transferring the planned reconstruction to the final restoration.
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The primary and secondary retentive elements were finally fabricated. The frameworks were tried in on the patient and checked for accuracy of fit (Figs. 4a-e). Achieving a tension-free fit was paramount in this context. The frameworks were veneered with SR Nexco Paste (Ivoclar Vivadent), a veneering composite with micro-opal fillers that was specially developed for the needs of dental technicians in terms of its physical and optical properties. Compared with ceramic materials, it absorbs forces better and is therefore particularly suited to veneering applications in implant restorations.

At this stage, the benefits of our meticulous approach to planning and of our transparent flask method were evident. SR Nexco Dentin material in the appropriate shade was pressed on to the conditioned framework and polymerised in a curing device (Fig. 6). With this method, the prosthesis could be homogeneously reproduced in SR Nexco Dentin in a relatively short time. The reconstruction was removed from the flask and reduced to the dentine core using the silicone key as a guide, similar to the cut-back technique (Fig. 6). Customised layering is essential to achieving a true-to-nature effect, not unlike ceramic restorations.

For complementing the incisal area, the corresponding material was placed into the flask and pressed on to the dentine core using heat and then polymerised. In a few more steps, we transferred the planned restoration to the final reconstruction using an aesthetic dentine and incisal material build-up (Fig. 7). After the pressed frameworks had been finished and fitted on to the models, the functional parameters were checked in the articulator and adjustments were made.

The next stage was to create lifelike gingival parts. The gingival materials were manually layered on to the framework. The comprehensive range of SR Nexco shades demonstrated its true potential here with a multitude of gingival shades. Materials of various degrees of translucency and opacity are available, providing abundant scope for creativity. These materials were used selectively to create a natural-looking artificial gingiva in accordance with the requirements of this demanding situation (Figs. 8a-d).

The restoration was completed in the customary manner. Shape, morphology and surface structure were all given the same amount of attention. After finishing the restoration (Figs. 9a–e), it was tried in. All aspects of the restoration were checked again and the shade effect was assessed. The transition between natural and artificial gingiva in the maxilla in particular was carefully examined. Although the patient showed pronounced lip dynamics with her entire vestibular space visible when laughing, the aesthetic success was not compromised. All criteria had been satisfactorily met, and approval for surface finishing and polishing was given.

During polishing, the beautiful characteristics and homogeneous material properties became apparent (Fig. 10). The optimally co-ordinated combination of micro-opal fillers and a composite matrix endows SR Nexco with the ability to be polished to an unmatched durable high gloss. The natural-looking opalescent effect can be seen in Figures 11 and 12, and is the result of the high content of inorganic opal fillers, among other things.

The optical properties can be best observed in transmitted and incident light. Studies have shown that SR Nexco offers long-lasting shade stability, a durable gloss and low plaque affinity, while providing the team with reliability. When the restorations were inserted, the patient was very satisfied with our efforts (Figs. 13 & 14). The patient was extremely content with her fixed restoration. The dentures blended in naturally with the features of her face (Fig. 15). In spite of the suboptimal operative situation, we managed to create a customised and highly aesthetic restoration. Both the hygiene capabilities and long-term stability of the restoration were ensured.

It was equally rewarding to see this patient again after a while and still be given the same smile of gratitude. A well-structured treatment plan and ideal materials enable us to fulfil the fundamental human need for individuality.
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“We still have a long way to go”
An interview with dental laser expert Dr Kirpa Johar, India

First introduced in the early 1990s, dental lasers are now used in almost every area of dentistry. DT Asia Pacific had the opportunity to speak with Dr Kirpa Johar, a dentist from Bangalore in India, who received his dental laser education from the University of Vienna, about new trends in the field and the difficulties in Asia of it becoming a mainstream product despite its clinical benefits.

DT Asia Pacific: Last year, the first carbon dioxide (CO2) laser, which is also suitable for hard-tissue indications, received approval by the Food and Drug Administration in the US. Could this be the next big thing in laser dentistry, in your opinion?

Dr Kirpa Johar: A CO2 laser receiving FDA approval for hard-tissue indications looks promising and could definitely be a game changer, as it could alter the way we understand laser dentistry right now. We will have to wait and see how things develop in this regard.

The laser community is split about whether CO2 or erbium-based lasers are the superior technology. Which type do you think is better suited to dental applications? CO2 lasers are usually considered to cut faster and with more precision. They also offer several advantages, such as galvanometer manipulation of the beam, a foot pedal to control speed and the ability to change the spot size with a tap on the touch screen. However, in Asia, being a price-sensitive market, the cost of dental equipment is always a decisive factor. I think a performance evaluation comparing erbium and CO2 lasers supported by more clinical studies would provide us with a better understanding of which technology is more suited to which application.

Since dental lasers were introduced in the early 1990s, the range of treatments has expanded from soft-tissue treatment to cosmetic dentistry and endodontics, for example. In which areas of dentistry is this technology most commonly used at the moment?

In this part of the world, dental lasers are commonly used for soft-tissue applications, including surgical, cosmetic and endodontic sterilisation. A contributing factor to this trend is that diode lasers have become more affordable and are available on the market in much larger variety. As lasers allow surgical procedures on soft tissue to be performed with no sutures and less anaesthesia, they are increasingly used in surgical and mucogingival procedures.

Is this one of the fields in dentistry to have benefited most from dental lasers?

Besides mucogingival procedures, I personally think that periodontal treatment has gained most from the use of laser technology. More patients are definitely motivated to undergo various periodontal procedures done with lasers compared with conventional surgery. Flap surgeries where bone loss is not very advanced, release of tongue-tie in infants, gingivectomies and opercutecotomies are some of the procedures that are simplified with laser.

Wound healing appears to benefit particularly from laser therapy. Could you explain why?

In my practice, I have seen good results in wound healing in cases in which I have used laser therapy for soft-tissue injuries and lacerations in the orofacial region after trauma, as well as in post-extraction cases. Post-operative discomfort was reduced too.

The biostimulatory effects of laser have been thoroughly investigated. In vitro experimental evidence has demonstrated the acceleration of collagen synthesis in fibroblast cultures, increased formation of granulation tissue and increased rates of epithelialisation in laser-irradiated wounds were some of the effects found in in vivo tests on animals. Low-level laser therapy has proven to be a great boon in wound healing.

With a penetration into dental practices of 20 to 30 per cent, dental lasers cannot exactly be called a mainstream product. Would you agree with that statement?

It is true that dental lasers are not very common, even in technologically advanced countries. In Asia, the use of laser dentistry is still marginal. I remember when I started
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working with dental lasers in my practice eight years ago, this field of treatment was completely unknown and the benefits of lasers were not yet fully understood then.

Awareness among the dental community however has improved and the market is growing, but we still have a long way to go in lasers being recognised as a mainstream product.

You offer international laser dentistry courses in India. What is the most common misconception concerning laser technology that you have encountered there?

I think the most common misconception still is that laser dentistry is for the elite and that it will not work in the practice owing to the cost-benefit ratio.

However, more dentists have recently begun to realise that lasers can improve their patient experience and help them add more procedures to the practice, which in turn makes it more profitable and rewarding.

What is clearly lacking in this field is unbiased quality education. Dentists need to understand that with the use of dental lasers they would be providing better dentistry to their patients and would make their own work more comfortable, which would in turn lead to happier patients, more referrals, and the subsequent overall growth of their practice.

My academy, Laser Dentistry Research and Review, is working in this direction and we hope to become a centre in Asia known for helping dentists receive the best in laser dental education and add value to their practice.

Once the use of dental lasers increases, more competitors will come into the market, which would help to keep prices competitive—which is good as long as the competition stays healthy. However, cost still plays an important role in the acquisition of the technology, particularly when it comes to hard-tissue lasers.

Can dental lasers be economically viable?

They definitely are. The simplification of many procedures with laser dentistry makes it possible to perform them in-house without having to refer the patient to a specialist. As the dentist would be considered someone providing the best in his or her field, referrals and income would most likely increase. I foresee that within the next decade every dental clinic will possess at least a soft-tissue laser. It is just a matter of time.

What would manufacturers have to do to make this technology more attractive to the masses?

Hard-tissue lasers need to evolve to a stage where they can be expanded to crown preparation and implant dentistry. If erbium lasers were capable of providing a wider range of applications along with routine soft-tissue procedures, this would make them more attractive. Dental Er:YAG lasers are now being developed for non-surgical facial aesthetic treatment and non-surgical treatment of sleep apnoea. Adding these procedures to the practice by incorporating laser technology will also help dentists make the investment in lasers a more viable option.

Laser experts and companies claim that laser technology is the future of dentistry. In your opinion, what role will the technology really play in clinical practice?

Laser dentistry definitely changes the way we practise dentistry. It is minimally invasive, simplifies things and reduces patient discomfort, as well as post-operative complications. It gives the dentist scope to expand his or her services to other fields, such as facial aesthetics or sleep apnoea treatment. These are some of the factors that make me believe that laser dentistry is the future of dentistry.

Thank you very much for the interview.
The preservation of the natural dentition is the prerequisite in daily patient care. In advanced periodontal disease, the successful realization of implant therapy requires knowledge in patient expectations, clinical diagnostics, proper surgical skills and delegation of basic services to dental hygienists. 

Implant treatment in severe periodontitis demands a two-step, time-tested approach, evaluating the outcomes of basic periodontal therapy before implant placement.

Integrated dentistry: Success for today and tomorrow

The successful positioning of dental partnerships in the fast-growing health market implicates predictable treatment strategies to save permanent teeth. According to orthopedic, cardiac or vascular medicine, an on-time decision-making for implant therapy is recommended to counterbalance functional and esthetic discomfort in advanced endodontic and periodontal breakdown settings.

Patient’s current and future expectations drive our practices into the necessity to provide synergistic periodontal and implant treatment solutions. The advantages are:

• Optimizing implant success by preceding with periodontal therapy.
• Enhanced economic profit due to by-effects from delegated scaling and root planing.

Promotion of oral and body health of both dental patients and staff members.

The need to preserve healthy teeth and gums, the ever-expanding influences of web, TV and magazines and an increase in low-cost implant treatment render implant dentistry internationally attractive. The transition of dental practices into the implant market is reasonable, especially for growing dental partnerships.

The capital investment and running costs for a surgical implant setting are redeemed by periodontal disease. The decision-making comprises a time-tested therapeutic approach. In advanced periodontal settings of more than 50 per cent bone loss with furcation involvement level III, patients suffer from oral discomfort. The tooth prognosis becomes less positive, the frequencies of follow-up visits increase (Fig. 1). Periodontal therapy “before” implant planning is aimed at saving doubtful (not hopeless) teeth with a grace period of at least three to six months to evaluate for periodontal treatment outcomes. Through scal- ing and root planing frequently results in a mid-term improvement (two years) up to a long-term stabilization (five years) of preliminary affected teeth.

The decision to maintain the periodontally compromised dentition undergoes the following criteria (Fig. 2):

• Patients with no personal preferences to comfort, esthetics and costs.
• Patients willing to accept enhanced tooth mobility, occasional food impaction and frequent professional tooth cleaning.
• Individuals with chronic diseases and autoimmune disorders.

The recommendation to replace affected teeth with implants is indicated in the following clinical situations and should be planned on-time after com-

Fig. 1: Treatment of advanced periodontal disease with implants replacing the natural dentition is recommended “time-tested” if 6 months following periodontal therapy (SRP). — Fig. 2: Exclusion criteria for implants with continuation of saving natural teeth after comprehensive periodontal therapy.

Fig. 3: Volume thickening with a free gingival graft in an initial thin tissue with buccal perforation. — Fig. 4: Peri-implantitis demands a two-step, time-tested approach, evaluating the outcomes of basic periodontal therapy before implant placement.

Fig. 5: In advanced periodontal disease, the successful realization of implant therapy requires knowledge in patient expectations, clinical diagnostics, proper surgical skills and delegation of basic services to dental hygienists. 

Fig. 6: Peri-implantitis demands a two-step, time-tested approach, evaluating the outcomes of basic periodontal therapy before implant placement.

Fig. 7: Volume thickening with a free gingival graft in an initial thin tissue with buccal perforation — Fig. 8: Short implants are advised in critical anatomical situations when the alveolar bone width is sufficient. Functionally, they represent no alternative to classical augmentation protocols (Photo: Kochhan).
While optimizing body metabolism with stimulating effects onto the vascular system.

Immunisations display foreign body infections that are more harmful for the body health than periodontal diseases.

The implant treatment plan in periodontally compromised patients results in a reduced den-
tition (Fig. 5):
• Fixed bridgeworks in the max-
illa and mandible up to the first molar
• Maxilla: preservation of pre-
molars and first molars, tooth
removal and implant therapy
with sinus floor elevation at furcation involvement level III (Fig. 6)
• Mandible: preservation of sec-
ond molars, restoration, no in-
clusion into bridgeworks
• Volume thickening with free
autogenous gingival grafts in
initial thin biotype settings
(Fig. 7)
• Short implants in both esthet-
ically and functionally less
demanding situations as an alter-
native to surgical augmen-
tation (Fig. 8).

Low bone quality (D3/D4),
lateral hard-tissue deficiencies
and increased mechanical load-
ing are contraindications for
short implants. According to con-
ventional implant rehabilitation,
the horizontal width of the alve-
olar bone crest is the fundament
for functional stabilization,
vascularization and nutrition, thus
for implant survival and clinical
success (Fig. 9).

Inflammation and hygiene

Clinical healthy and stable
implants are completely covered
within the alveolar bone by os-
seointegration. They also are at-
tached to the periimplant gingiva
g and thereby become functionally
included into the body’s metabo-
lism. This explains the high over-
all survival rates of oral implants
between eight and more than 15
years.

The combination of a thin
biotype gingiva with lack of soft
tissue protection, functional
overload due to stress, habits or
a missing front-canine equili-
bration and loss of biofilm pro-
tection by periodontal diseases
often causes mid-term damages
(two years after functional load-
ing) of the implant-to-bone inter-
face. Like periodontally affected
teeth with lack of hygiene access
and periimplant biofilm accumu-
lation, implants develop a poten-
tial risk of inflammation when
bacteria enter the implant-to-
bone interface (Fig. 10).

If the close hard and soft
tissue sealing disappears ir-
reversibly, foreign-body infec-
tions occur within the oral cavity
which are more harmful for the
implant-supporting bone and the
body health than periodontal
diseases. The best protection
against periodontal inflamma-
tion is not avoiding implants:
а careful implant placement
strategy with constant thick-
ening of the surrounding tis-
ues and relief from functional
overload preceded by augmen-
tative solutions is rec-
ommended.

Preservation of periodontally
compromised natural teeth is
advised when patients display no
preference for further comfort
and esthetics. Periodontal ther-
apy is continued, supplemented
with surgery in advanced intra-
bony settings where oral hygiene
is impaired. The long-term suc-
cess for the natural dentition and
implants similarly depends on
patient’s medical and local risik
factors that cannot be forecasted
with any generic or susceptibility
test for sale.
Adapting CBCT in private practice: A personal experience

Dr Barry Kaplan
USA

Consider the allegory of a pilot navigating a plane with no cockpit controls and poor visibility. It is too dark to see, and there are no reference points to help the pilot guide the plane. At this point, the sky is a 2-D world. This scenario is frightening to even the most skilled pilots navigating the unknown.

Implant dentistry offers similar challenges in navigating the implant properly into the receptor site so that it meets the surgical and prosthetic goals of the plan. In order to achieve proper implant placement, we need predictability.

As a trained prosthodontist, it has always been my goal to achieve a high degree of predictability. When evaluating implant receptor sites, I realised early on the need for top-down cognition during the treatment planning process.

In other words, the teeth are first visualised in their ideal prosthetic position and then the implants are planned in each potential receptor site to best suit the intended position of the teeth or occlusion. Unless you control those steps, the process is guided by a level of guesswork, and therefore you are not flying with a high degree of predictability.

It is well established that a 2-D radiograph and/or panoramic radiograph of the bone does not provide the information necessary to fully appreciate the spatial topography of the 3-D receptor site. An analogy would be observing two stars that appear close together in the night sky that are actually light-years apart.

Another issue with 2-D radiographic modalities is that they have varying degrees of distortion. Once I realised that there were these types of errors with 2-D imaging, I came to the understanding that 3-D imaging gave me the best chance of optimising control of implant placement, and avoiding vital adjacent anatomy.

Prior to the last decade, the only way to access this technology was by referring your patient to the hospital radiology department or imaging centre for a medical-grade CT. In that venue, we lacked control of some of the process, including proper head position, optimum slice thickness, resolution and higher radiation exposure which may have affected the diagnostic quality of the images. All of this changed with the advent of CBCT scanning devices that have made the 3-D technology accessible to the dental profession in a cost-effective way.

My early attempt to interface with 3-D imaging technology was to send the patient to a separate location for a CBCT scan. This posed some logistical problems in terms of having the patient scheduled in a timely fashion, and was inconvenient, as this required going to an unfamiliar facility. Many patients will lose motivation when too many barriers are encountered, such as travelling to a distant centre for image acquisition.

It was still essential that the patient’s head was properly positioned in the machine. If the head is not positioned properly, erroneous information may be gleaned from the cross-sectional images.

Another potential source of error in a large imaging centre is whether the machines are periodically calibrated to insure consistent accuracy. Lastly, unless the doctor is present during the image acquisition (at the imaging centre), he or she is unable to ensure that pre-scan details are attended to (e.g. cotton rolls between the teeth or the proper seating of a radiopaque scanning appliance).

In order to overcome some of these issues, my next progression was to try a mobile imaging service. A specially equipped van fitted with a CBCT device will travel to your office or the patient’s home. Although this is much more convenient for the patient, reliability of these services is sometimes questionable and there may be concerns again about calibration due to relatively imperfect road surfaces, which may cause the machine to bounce around in the van. In addition, there may be issues with transferring the data, depending on the software applications that are to be used.

All of the points in contention were resolved when I decided to purchase a CBCT device for my office. After investigating all of the machines, I decided on an i-CAT Classic (Imaging Sciences).

Having CBCT technology in the office has provided me with the control that I desired and has made a dramatic change in our daily workflow, with instant access to the technology. I can be viewed in three different orthogonal views (axial, coronal and sagittal), as well as a 3-D reconstructed solid model view—all with total interactivity afforded to me through the software applications.

The complete visualisation of the anatomy can be viewed and information assessed almost immediately. Treatment planning is expedited, since the patient does not have to schedule an appointment at a separate location. In addition to passively viewing the images on the LCD screen, the data can be imported into third-party software that allows for virtual 3-D implant placement, providing me with the tools that I need to remove all of the guesswork associated with 2-D imaging.

The treatment plan can be shown on a large screen in my office or on my laptop to each patient, greatly enhancing treatment acceptance. Once accepted by the patient, the treatment plan can then be accurately carried out via a surgical guided derived from the 3-D planning software.

Other advantages of CBCT imaging in the office that I have found highly rewarding are airflow analysis for sleep apnoea patients; interpretation of hard-tissue pathology (Figs. 3a & b, 4a & b); identification of vital structures during oral surgery procedures (Figs. 1a & b), such as third-molar extractions; periodic/radiographic evaluations; and identification of radiopacities suggestive of carotid artery calcification, requiring further evaluation by a radiologist (Fig. 2).

Having CBCT in the office has allowed me to have a greater understanding and appreciation of the anatomy and related structures of each patient. This knowledge is then applied during the treatment planning process to determine which tissues are deficient and with careful attention to vital structures so that implants can be placed in the most optimal receptor sites.

Honestly, I do not know how I could practice without a CBCT device in my office today.
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