

NOBEL IN CHEMISTRY FOR KENSO SOAI AND HENRI KAGAN ■ FAIR TRADE COMMISSION RAIDS FOUR BREWERS ■ NIKKEI HOLDS 70,000 ■ REAL WAGES UP EIGHTH MONTH ■ KOGUMA VERY STRONG BY SATURDAY

Kenso Soai Shares the Nobel Prize in Chemistry for Molecules That Multiply Their Own Handedness; Japan's Tenth Laureate in the Field, and Its Second in Two Years

The Tokyo University of Science professor emeritus, 76, is honoured with Henri Kagan of France 'for the discovery of non-linear effects and autocatalysis in asymmetric organic synthesis', work that bears on how medicines are made and on why life uses only one hand

By Maya Suzuki | Science & Innovation Desk, with Ethan Cole | Technology & Science Editor



Henri Kagan, left, of the Université Paris-Sud, and Kenso Soai of Tokyo University of Science, the 2026 laureates in chemistry, as shown at the Royal Swedish Academy of Sciences' announcement in Stockholm on Wednesday evening, Japan time. The citation reads 'for the discovery of non-linear effects and autocatalysis in asymmetric organic synthesis'. (Image supplied for this edition; portraits: Franklin Institute, Tokyo University of Science)

Kenso Soai, a professor emeritus at Tokyo University of Science, was awarded the Nobel Prize in Chemistry on Wednesday together with Henri Kagan of the Université Paris-Sud in France.

The Royal Swedish Academy of Sciences, announcing the prize in Stockholm at a quarter to seven in the evening, Japan time, cited the two men 'for the discovery of non-linear effects and autocatalysis in asymmetric organic synthesis'.

Mr Soai, who is 76, is the tenth Japanese to win the chemistry prize and the 31st Japanese individual to win a Nobel prize of any kind, the Asahi Shimbun, the Yomiuri Shimbun and Sankei News report. Japan won the chemistry prize last year as well, through Susumu Kitagawa of Kyoto University.

Mr Kagan was born in France in 1930.

Left hands and right hands

The prize concerns a property that chemists call chirality, or handedness. Many molecules exist in two forms that are mirror images of each other, identical in their atoms and their connections but impossible to superimpose, as a left hand cannot be laid exactly on a right.

The difference matters enormously in living things. The body's receptors and enzymes are themselves handed, and they can respond to one form of a drug and not the other, or respond to the two in different ways. Making medicines in the right form, and only that form, is one of the central tasks of modern chemistry.

Ordinary reactions produce the two forms in equal amounts. Asymmetric synthesis is the art of making one in preference to the other, usually with the help of a catalyst that is itself handed.

What the two men found

Mr Kagan, a leader of the field in France since the 1960s, showed in 1986 that the relationship between the purity of such a catalyst and the purity of the product does not have to be a straight line. A catalyst that is only partly in one form can, in some reactions, yield a product much purer than itself. The finding became known as the non-linear effect.

Mr Soai went further. In 1995 his group in Tokyo reported a reaction in which the product is its own catalyst: each molecule formed helps to form more molecules of the same hand.

Starting from a mixture with only the slightest excess of one form, repeated rounds of the reaction produced a product of almost complete purity. The process is called asymmetric autocatalysis, and in the literature of chemistry it is known simply as the Soai reaction.

Medicine, and the origin of life

The work matters for two reasons.

The first is practical. Methods that amplify a small

preference into a large one bear on how chiral compounds, including pharmaceutical ingredients, can be made efficiently.

The second is a question as old as biochemistry. The amino acids in the proteins of every living thing are of one hand and the sugars in DNA and RNA of one hand, though chemistry without life makes both in equal amounts. How life came to choose is not known.

Mr Soai's reaction shows one way it could have happened: a tiny imbalance, amplified by molecules that copy their own handedness, can grow until one form all but disappears. His group later showed that the reaction could be tipped by triggers as slight as polarised light, crystals of quartz, and molecules made handed only by a difference in isotopes.

'Japan's environment'

Speaking to reporters on Wednesday evening, Mr Soai described the achievement as the product of a high standard of research in Japan, and said he was glad to share the prize with Mr Kagan, according to the reports.

He also said, as Asahi and Reuters relate, that he had thought nobody would object if he won it.

It was a confident remark, and an understandable one. His reaction has been famous among chemists for three decades.

The two laureates share prize money from the Nobel Foundation, and the prizes are presented in Stockholm on December 10.

Japan's line in chemistry

The prize continues a Japanese tradition in the chemistry of handedness. Ryoji Noyori of Nagoya University shared the prize in 2001 for catalysts that make one mirror form of a molecule selectively, methods now used in industry to make medicines and fragrances.

Mr Kagan's earlier work was part of the same story. A ligand his laboratory designed in the early 1970s was among the first of the handed molecules that made such catalysts possible.

In 2001, the year Mr Noyori won his Nobel, he and Mr Kagan shared the Wolf Prize in Chemistry with the American K. Barry Sharpless. Mr Kagan has now joined them.

Also today

Tokyo shares fell for the first time in three sessions. The Nikkei average lost 648 yen to 70,035.71 but held above 70,000, and the TOPIX rose briefly in the morning above its high of August 14. Real wages rose 1.5 per cent in August, the eighth monthly rise in a row. The reports are on the economy pages.

The Fair Trade Commission has raided the four big

BUSINESS

Competition Watchdog Raids the Four Big Brewers on Suspicion of Fixing Shipping Prices

By Daisuke Ito | Investigations & Longform

The Japan Fair Trade Commission has conducted a compulsory investigation of four beer companies, Asahi, Kirin and Suntory among them, on suspicion that they formed a cartel over the prices at which they ship their products, the Japan Agricultural News and the Yomiuri Shimbun report.

The companies are suspected of having adjusted their prices with one another over several years, according to the reports.

The four are the giants of the Japanese beer market, which they have dominated for decades, and their products fill the shelves of every supermarket and convenience store in the country.

A cartel, an agreement between competitors to fix prices or divide markets, is prohibited by the Antimonopoly Act. Companies found to have taken part face surcharges calculated on their sales of the products concerned, and in serious cases a criminal complaint, fines and prison sentences for the individuals responsible.

A compulsory investigation is the commission's procedure for the most serious cases, those it may refer to prosecutors for criminal charges. With warrants issued by a judge, its investigators can search offices and seize documents. It used the procedure in September last year against eight sellers of diesel fuel suspected of fixing prices, Kyodo News reported at the time.

An investigation is not a finding. The companies are presumed not to have broken the law unless the commission or a court establishes that they did.

The reports did not include the companies' responses, and none of the four had commented publicly by the time these pages went to press.

The investigation comes at a sensitive moment for the industry. On October 1 the liquor tax on beer, low-malt beer and the cheaper beer-like drinks was unified at a single rate, the last step of a reform agreed in 2017, lowering the tax on beer and raising it on its cheaper rivals.

Brewers have also raised their prices several times in recent years, citing the cost of grain, aluminium for cans, energy and transport. In October 2022 all four raised the prices of beer and beer-like drinks, the first general increase in 14 years.

Price rises at the same time do not in themselves prove a cartel. Competitors facing the same costs often move together, and the law punishes agreement, not coincidence. The commission will have to show that the companies communicated and agreed.

Shipping prices are the prices at which manufacturers sell to wholesalers and retailers, and they set the floor for what drinkers pay in shops and bars.

Competition authorities abroad have pursued brewers before. Germany's fined several in 2014 for price-fixing, and India's fined three large brewers in 2021.

The investigation is the latest sign of a firmer line by the commission on cartels in everyday goods and services. In 2023 it ordered electric power companies in western Japan to pay record surcharges of about 101 billion yen for agreeing not to compete for one another's customers.

The commission does not comment on investigations in progress. A case of this kind usually takes many months to complete.

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WEATHER — TOKYO

25°C

Low 15°C · Sunny

Sapporo

22°

Osaka

27°

Fukuoka

27°

Naha

30°

Sunny across Japan: 6°C in Kushiro this morning. No. 28 turns north and becomes extratropical by Sunday. No. 29 very strong from early Saturday, nearing the Ogasawara Islands early Monday. Full weather, Page 13.

TODAY IN BRIEF

- Nobel: Kenso Soai of Tokyo University of Science, 76, shares the chemistry prize with Henri Kagan of France, 95, for non-linear effects and autocatalysis in asymmetric synthesis. Japan's 31st laureate, its tenth in chemistry.
- Brewers: the Fair Trade Commission conducts a compulsory investigation of four beer companies, Asahi, Kirin and Suntory among them, on suspicion of fixing shipping prices over several years.
- Markets: the Nikkei falls 648 yen to 70,035.71 but holds 70,000; chip-equipment makers and banks are sold. The TOPIX briefly passes its August 14 high.
- Wages: real wages rise 1.5% in August, the eighth monthly rise in a row and the first such run in ten years.
- Diet: Takaichi calls a consumption tax cut 'the best method'; Koja tells her of his 'strong indignation' over the Naha killing; Yana says there is no record of a meeting.
- Typhoons: No. 28 turns north and becomes extratropical east of Japan by Sunday. No. 29, Koguma, is forecast very strong from early Saturday and nears the Ogasawara Islands early Monday.

TWO TYPHOONS

- No. 28 (Nolo): north, extratropical by Sunday.
- No. 29 (Koguma): very strong from Saturday.
- Chichijima in storm-wind area by Tuesday.
- No. 27 extratropical since Wednesday night.

TODAY

- 8 p.m.: Nobel Prize in Literature.
- World judo: women's 70 kg, men's 90 kg.
- Tokyo sunny, 25 degrees.

MARKETS	
Nikkei 225	70,035.71 ▼648.27
TOPIX	4,154.11 ▼29.45
Yen (Tue.)	158.14 per \$
10-yr coupon	3.1%
Long-term rate (Tue.)	3.105%
BOJ policy rate	1.25%
Real wages, Aug.	+1.5%

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THE WEEK

- Fri. Oct. 9: Peace Prize; curfew in Okinawa.
- Sat. Oct. 10: Climax Series begins.
- Mon. 12: Sports Day.

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Kenso Soai Shares the Nobel Prize in Chemistry for Molecules That Multiply Their Own Handedness; Japan's Tenth Laureate in the Field, and Its Second in Two Years

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brewers on suspicion of fixing shipping prices. The report is alongside.

Prime Minister Sanae Takaichi told the lower house that a cut in the consumption tax was the best method of relieving households, and that the design of its funding would be decided after deliberation. She met the governor of Okinawa, Genta Koja, who expressed his strong indignation over the killing in Naha. The

TYPHOONS

Minamitorishima and Wake: The Two Lonely Islands That Name the Storms' Positions

By Hana Ito | Research & Archive

Thursday's bulletins placed one storm near Minamitorishima and the other near Wake Island. Both are tiny specks in a vast ocean, and both have long histories.

Minamitorishima, also called Marcus Island, is the easternmost point of Japan. A flat triangle of coral about two kilometres on each side, it lies roughly 1,900 kilometres south-east of Tokyo and about 1,200 kilometres east-south-east of Chichijima.

It has no civilian residents. Staff of the meteorological agency and the Maritime Self-Defense Force live there on rotation, and the agency's observatory sends up weather balloons twice a day, making it one of the most valuable observing points in the western Pacific.

The island gives Japan a large exclusive economic zone. In 2013 researchers led by the University of Tokyo reported that the deep-sea mud in that zone was rich in rare-earth elements, the metals used in magnets for motors and electronics, and the government has since been testing ways to bring it up from depths of more than five thousand metres.

Wake Island, about 1,400 kilometres to the east-south-east of Minamitorishima, is an American territory, an atoll with an airfield used by the United States military.

It was the scene of a battle in December 1941, when Japanese forces captured it after an American garrison had beaten off a first assault. Japan held the island until the end of the war.

Today it has no permanent population, only a few military personnel and contractors.

For forecasters, such islands are reference points. In the open ocean there is little else to name, and a storm described as near Wake Island is placed in the minds of mariners and meteorologists at once.

Their weather stations are also among the few places where a typhoon's winds and pressure can be measured directly, rather than estimated from satellite images.

On Thursday morning Nolo was moving west past Minamitorishima, and Koguma was heading north-north-west, away from Wake.

TYPHOONS

Circles and an Outline: How to Read the Forecast on a Typhoon Map

By Kenta Sakamoto | Data & Visualization

A typhoon map carries more information than it first appears to, and three of its shapes are worth knowing.

The first is the shaded disc around the storm's present position. The inner disc is the area where storm-force winds, 25 metres a second or more, are blowing now. The outer disc is the area of gales, 15 metres a second or more.

Those areas are rarely round. On Thursday Koguma's gales extended 330 kilometres to the north-west and 280 kilometres to the south-east. A storm's winds depend on its own rotation, its movement and the pressure systems around it, and they are often strongest on the right-hand side of its track.

The second shape is the forecast circle: the dashed circle at each future time. The centre of the storm is expected to be inside it with a probability of 70 per

reports are on the politics pages.

Typhoon No. 29, Koguma, is forecast to become a very strong typhoon by early Saturday and to approach the Ogasawara Islands early next week. The map is inside.

Today's editorial takes its subject from the cartoon: the long watch behind this week's prizes.

cent.

The circles grow with time because forecasts become less certain the further ahead they look. A small circle means the computer models agree; a large one means they do not.

The circle shows where the centre may be. It does not show the size of the storm, which is a common misunderstanding. A large typhoon whose centre stays inside the circle can still bring storm winds far outside it.

The third shape is the outline that encloses the forecast circles, the storm warning area. It is the area that could have storm-force winds at some point during the forecast period, if the centre moves anywhere within the circles.

On Thursday's map, Chichijima lies inside Koguma's storm warning area by 3 a.m. on Tuesday. That does not mean storm winds are certain there. It means they are possible, and that preparations are prudent.

The line joining the centres of the circles is the most likely track, but it is only the middle of the possibilities, not a prediction to be relied upon.

Japan's meteorological agency issues forecasts five days ahead for typhoons, and updates them every three to six hours, more often when a storm is near.

TYPHOONS

A Colourful Cloud, a Hawaiian Name and a Little Bear: Where This Week's Typhoon Names Came From

By Hana Ito | Research & Archive

Japan numbers its typhoons, in order, from the first of each year. The world knows them by names, and this week's three have names from three different places.

Since 2000, storms in the western North Pacific have been named from a list of 140 names contributed by the 14 members of the Typhoon Committee, a body of the United Nations' regional economic commission and the World Meteorological Organization. The names are used in rotation, and the Japan Meteorological Agency assigns them.

Choi-wan, Typhoon No. 27, was contributed by Hong Kong. It means a colourful cloud.

Koguma, No. 29, is a Japanese contribution. Japan offered the names of constellations, and Koguma, the little bear, is Ursa Minor, the constellation that holds the Pole Star.

Nolo, No. 28, does not come from the Typhoon Committee's list at all. It is a name from the list used by forecasters in Hawaii for storms in the central Pacific.

When a storm forms east of the date line and crosses into the western Pacific, it keeps the name it was given, and Japan gives it a number in its own series. That is what happened to Nolo.

Names are retired when a storm causes great loss of life or damage, and the member that contributed it proposes a replacement. Japan's Koppu, a cup, was retired after a destructive typhoon in the Philippines in 2015 and replaced by Koinu, the little dog.

The numbering tells its own story this year. Koguma is the 29th storm of the season. The average number for a whole year, over the three decades to 2020, is about 25.

Late-season storms are common. October and November typhoons usually form far to the south-east and, like this week's, tend to curve away to the east of Japan.

The agency's numbers reset on January 1, and any

storm that forms after that begins next year's count at No. 1.

TYPHOONS

The Ogasawara Islands Watch Koguma: High Waves Likely, and Storm Winds Possible by Early Tuesday

By Emi Kondo | Society & Local News

For the roughly 2,500 people of the Ogasawara Islands, Typhoon No. 29 is not a distant storm on a map.

The islands, about a thousand kilometres south of Tokyo, lie close to the forecast track of Koguma, which the Japan Meteorological Agency expects to be a very strong typhoon by early Saturday.

The agency's bulletin on Thursday morning places Koguma near the Ogasawara Islands early on Monday and about 510 kilometres east-north-east of Chichijima at 3 a.m. on Tuesday. Chichijima, the main island, lies inside the area that could have storm-force winds by then.

The weather company tenki.jp warns of high waves with swell and rough seas around the islands, and notes that the forecast cone for Monday is large.

Swell from Typhoon No. 27 is still running over the seas off the Ogasawara and Izu Islands and the Kanto coast, forecasters say, and Koguma's will follow.

The islands have no airport. Their link with the mainland is the Ogasawara Maru, a ship that takes about a day to sail from Takeshiba pier in Tokyo to Chichijima, usually leaving about once every six days.

When a typhoon threatens, the shipping company may change the schedule, bringing a departure forward or holding the ship in port. Visitors planning to travel over the holiday should check its announcements.

Islanders are used to typhoons, and their houses and harbours are built for them. The usual preparations are to secure boats and anything that could be blown away, stock food and water, and charge telephones and lights.

Hahajima, the other inhabited island, lies about 50 kilometres south of Chichijima.

The islands' unique plants and animals, which earned them a place on UNESCO's World Heritage list in 2011, have survived typhoons for millions of years. Their people prepare all the same.

TYPHOONS

Why Autumn Typhoons Turn North-East: The High-Pressure System That Steers Them, and the Westerlies That Take Over

By the Weather Desk

Typhoons do not choose their paths. They are carried by the winds around them, like corks in a stream.

In the western Pacific the main steering current is set by the Pacific high, a vast area of high pressure centred over the ocean south-east of Japan. Air circulates clockwise around it.

On the southern side of the high the winds blow from the east, and young storms forming in the tropics move west or north-west, towards the Philippines, Taiwan or southern China.

A storm that reaches the western edge of the high begins to curve north, following the clockwise flow. If it goes far enough north, it meets the westerly winds of the middle latitudes, which carry it north-east. Meteorologists call the turn recurvature.

In summer the high is strong and extends far to the west, so typhoons often travel a long way west before turning, sometimes into Okinawa and Kyushu.

In autumn the high weakens and retreats eastward, and the westerlies move south. Storms therefore tend to turn sooner and further east, and many pass to the east of Japan without touching it.

That is the pattern forecast for both of this week's storms. Nolo is expected to turn north on Friday and Saturday. Koguma is expected to move north-west and then north as it nears the Ogasawara Islands.

Autumn typhoons that do strike Japan can be among the most dangerous, because once caught by the westerlies they move fast, and because they meet the autumn rain front, which can produce very heavy rain far from the storm itself.

Typhoon Hagibis, which crossed Kanto in October 2019 and caused severe flooding along the Chikuma, Abukuma and other rivers, was such a storm.

The forecast track shows the most likely path given the expected steering. When a storm sits near the edge of the high, small changes in the high's shape can mean large changes in its track, which is why the forecast circles for Koguma are wide.

TYPHOONS

Choi-wan Becomes an Extratropical Low East of the Kurils, but the Tohoku Pacific Coast Stays Rough Until Midday

By the Weather Desk

Typhoon No. 27, Choi-wan, became an extratropical low east of the Kuril Islands at 9 p.m. on Wednesday, the Japan Meteorological Agency said in its final bulletin on the storm.

The change was expected. On Wednesday morning the agency had forecast that the storm, then a large typhoon racing north-east at 65 km/h, would lose its tropical character during the day.

The low still carries strong winds over the sea, but its energy now comes from the contrast between warm and cold air, as in an ordinary storm of the middle latitudes, rather than from warm ocean water.

Its legacy on the coast lasts longer. The Pacific coast of Tohoku will see rough seas until about midday on Thursday, the Japan Agricultural News reports.

Swell from the storm also remains over the seas off the Ogasawara and Izu Islands and the Kanto coast, forecasters say.

Swell is the long, regular wave that travels far beyond the winds that raised it. It can look harmless from the shore and still sweep people off rocks and breakwaters.

Fishing boats, surfers and anglers are the people most at risk on a sunny day after a storm, when the sea looks calmer than it is.

Choi-wan passed far off the coast of Japan. Its gales stretched hundreds of kilometres from its centre, and it disrupted ferries to the Izu Islands earlier in the week.

Its name, contributed by Hong Kong, means a colourful cloud.

With Choi-wan gone, two storms remain: Nolo, which is expected to follow it into extratropical life by Sunday, and Koguma, which is still growing.

TYPHOONS

Two Storms at 6 a.m. Thursday

By the Weather Desk

NO. 28 NOLO: severe tropical storm, near Minamitorishima. Centre 26.7N 156.2E, about 1,390 km east of Chichijima. Moving west at 40 km/h.

NOLO STRENGTH: 985 hPa; winds 30 m/s, gusts 45. Storm winds 130 km all round; gales 330 km north, 220 km south.

NOLO FORECAST: 6 p.m. Thursday, 985 hPa, 30 m/s. 6 a.m. Friday, strong typhoon, 980 hPa, 35 m/s. 3 a.m. Saturday, 980 hPa, 35 m/s, about 700 km north-east of Chichijima. 3 a.m. Sunday, extratropical low, 984 hPa, about 890 km east of Tokyo.

NO. 29 KOGUMA: severe tropical storm, near Wake Island. Centre 16.6N 161.7E, about 2,320 km east-south-east of Chichijima. Moving north-north-west at 15 km/h.

KOGUMA STRENGTH: 990 hPa; winds 30 m/s, gusts 40. Storm winds 55 km all round; gales 330 km north-west, 280 km south-east.

KOGUMA FORECAST: 6 a.m. Friday, strong typhoon, 965 hPa, 40 m/s. 3 a.m. Saturday, very strong, 950 hPa, 45 m/s. 3 a.m. Sunday, very strong, 950 hPa, 45 m/s.

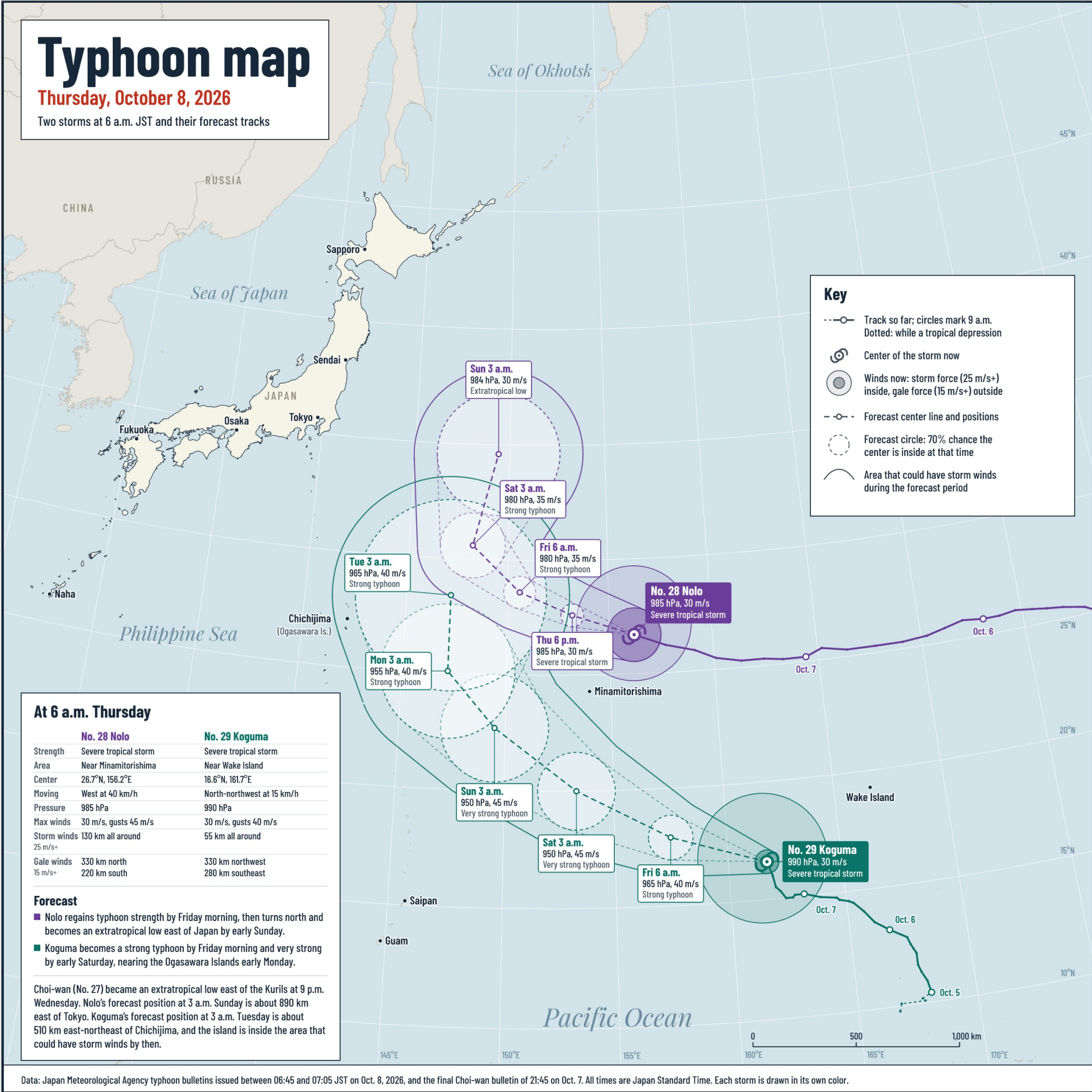
KOGUMA LATER: 3 a.m. Monday, strong, 955 hPa, 40 m/s, nearing the Ogasawara Islands. 3 a.m. Tuesday, strong, 965 hPa, 40 m/s, about 510 km east-north-east of Chichijima.

CHICHIJIMA: inside the area that could have storm winds by early Tuesday.

NO. 27 CHOI-WAN: became an extratropical low east of the Kuril Islands at 9 p.m. Wednesday.

SOURCE: Japan Meteorological Agency bulletins issued between 6:45 and 7:05 a.m. on October 8, and the final Choi-wan bulletin of 9:45 p.m. on October 7.

TYPHOONS



Two storms at 6 a.m. on Thursday and their forecast tracks, in the map supplied for this edition: Typhoon No. 28 (Nolo), a severe tropical storm near Minamitorishima, forecast to strengthen, turn north and become an extratropical low about 890 km east of Tokyo by early Sunday; and No. 29 (Koguma), near Wake Island, forecast to be very strong by early Saturday and about 510 km east-north-east of Chichijima early on Tuesday. The shaded discs are each storm's present areas of storm-force winds and gales; each dashed circle is where the centre is expected to be at that time with a probability of 70 per cent; the outlines enclose the areas that could have storm winds. (Data: Japan Meteorological Agency typhoon bulletins issued between 6:45 and 7:05 a.m. on October 8, and the final Choi-wan bulletin of 9:45 p.m. on October 7)

TYPHOONS

Nolo Regains Strength and Turns North, Away From Japan; Koguma Grows Into a Very Strong Typhoon and Heads for the Waters East of the Ogasawara Islands

Choi-wan has become an extratropical low east of the Kurils; Chichijima is inside the area that could see storm winds by early Tuesday

By Kenta Sakamoto | Data & Visualization

Two storms remain on the map this morning, where yesterday there were three.

Typhoon No. 27, Choi-wan, became an extratropical low east of the Kuril Islands at 9 p.m. on Wednesday, according to the Japan Meteorological Agency's final bulletin on it. It is no longer a typhoon, though its swell is still reaching the coast.

The map on this page shows the other two as they stood at 6 a.m. on Thursday, drawn from the agency's bulletins issued between 6:45 and 7:05 a.m.

No. 28: north, then gone

Typhoon No. 28, Nolo, was a severe tropical storm near Minamitorishima, at 26.7 degrees north, 156.2 degrees east, about 1,390 kilometres east of Chichijima. It was moving west at 40 km/h, with a central pressure of 985 hPa and maximum winds of 30 metres a second, gusting to 45.

It is forecast to regain typhoon strength by Friday morning, becoming a strong typhoon of 980 hPa with winds of 35 metres a second, and then to turn north.

Its forecast track takes it about 700 kilometres north-east of Chichijima early on Saturday. By 3 a.m. on Sunday it is expected to have become an extratropical low about 890 kilometres east of Tokyo.

No. 29: the one to watch

Typhoon No. 29, Koguma, was a severe tropical storm near Wake Island, at 16.6 north, 161.7 east, about 2,320 kilometres east-south-east of Chichijima. It was moving north-north-west at 15 km/h, with a pressure of 990 hPa and winds of 30 metres a second, gusting to 40.

The agency forecasts that it will become a strong typhoon by Friday morning, with a pressure of 965 hPa, and a very strong one by early Saturday, at 950 hPa with winds of 45 metres a second. It is expected to keep that strength through Sunday.

It is forecast to be nearing the Ogasawara Islands early on Monday, the Sports Day holiday, still a strong typhoon of 955 hPa. At 3 a.m. on Tuesday its forecast position is about 510 kilometres

28th storm of Japan's typhoon year.

By Wednesday it had weakened. At 6 a.m. on Thursday it was a severe tropical storm near Minamitorishima, Japan's easternmost island, moving west at 40 km/h with a central pressure of 985 hPa and winds of 30 metres a second.

The Japan Meteorological Agency forecasts a revival. By Friday morning Nolo is expected to be a strong typhoon again, at 980 hPa with winds of 35 metres a second.

It is then forecast to turn north, passing about 700 kilometres north-east of Chichijima early on Saturday.

east-north-east of Chichijima, and the island lies inside the area that could have storm-force winds by then.

How sure

The dashed circles on the map show where each centre is expected to be, with a probability of 70 per cent, at each forecast time. For Koguma they grow large by Monday and Tuesday, a measure of the uncertainty five days ahead.

The weather company tenki.jp notes that many of the computer calculations take Koguma away to the east of Honshu, and that the risk of high waves around the Ogasawara Islands is the clearest danger.

No landfall on the main islands of Japan is forecast. The Ogasawara Islands, a thousand kilometres south of Tokyo, are where Koguma's winds and seas will be felt first.

After that, cooler water and the westerly winds of the middle latitudes will take hold of it. By 3 a.m. on Sunday it is expected to have become an extratropical low about 890 kilometres east of Tokyo.

Storm-force winds extended 130 kilometres around its centre on Thursday morning, and gales 330 kilometres to the north and 220 kilometres to the south.

Its direct effect on Honshu is expected to be small, according to the forecasts, but its swell will add to the waves on the Pacific coast over the weekend.

Storms that weaken and then strengthen again are not rare. A storm moving over warmer water, or into an

area where the winds aloft are lighter, can reorganise.

For shipping in the Pacific east of Japan, the storm will remain a hazard until it has completed its change on Sunday.

TYPHOONS

The Three-Day Weekend: Fine on the Main Islands, a Very Strong Typhoon Out at Sea, and Waves on the Pacific Coast

By the Weather Desk

Saturday begins a three-day weekend that ends with the Sports Day holiday on Monday. The weather on the main islands begins it well.

Thursday is sunny across Japan from Hokkaido to Kyushu, according to the forecast map, with a chilly start in the north and highs in the upper twenties in western Japan.

The typhoons are the complication, and mainly at sea. Koguma is forecast to be a very strong typhoon from early Saturday to Sunday, south-east of Japan and far from the main islands, and to near the Ogasawara Islands early on Monday.

Nolo is forecast to pass about 700 kilometres north-east of Chichijima early on Saturday and to become an extratropical low east of Japan by Sunday.

For travellers, the chief effects will be on the sea. High waves are likely around the Ogasawara Islands, and swell will continue on the Pacific coasts of the Izu Islands and Kanto.

Ferries to the islands may change their schedules. Beaches, rocky shores and breakwaters on the Pacific side are best avoided while the swell is running, however fine the weather.

Many of the computer calculations take Koguma away to the east of Honshu, tenki.jp says. The forecast for Tuesday and beyond remains uncertain, and travellers returning on Monday evening should check the latest bulletins.

The weekend's events include the Climax Series in baseball, whose first stages are played under roofs in Tokyo and Tokorozawa, and the Izumo university relay race on Monday.

Autumn festivals continue around the country, among them the Takayama festival in Gifu on Friday and Saturday.

The meteorological agency updates its typhoon forecasts every few hours, and forecasts for the weekend will be revised as the storms develop.

TYPHOONS

Strong, Very Strong, Violent: The Words Japan Uses for a Typhoon's Power and Size

By the Weather Desk

When the Japan Meteorological Agency calls Koguma a very strong typhoon, as it expects to on Saturday, it is using a defined scale, not an impression.

In Japanese usage any tropical storm with maximum sustained winds of 17.2 metres a second or more is a typhoon. Internationally, the agency distinguishes tropical storms, severe tropical storms and typhoons proper, and the maps in this edition follow the agency's English terms.

A storm is described as strong when its maximum winds reach 33 metres a second, about 119 km/h.

It is very strong from 44 metres a second, about 158 km/h, and violent from 54 metres a second, about 194 km/h.

Koguma's forecast peak of 45 metres a second puts it just inside the very strong category.

Size is described separately, by the radius of the area of gales of 15 metres a second or more. A typhoon is large when that radius is 500 kilometres or more, and very large when it is 800 kilometres or more.

The two scales are independent. A small typhoon can be violent, and a very large one can be relatively weak at its core.

The agency measures maximum winds as ten-minute averages. American forecasters use one-minute averages, which give higher figures for the same storm, so their numbers and Japan's should not be compared directly.

Central pressure tells a similar story. The lower it falls, the stronger the storm usually is. Koguma's forecast low of 950 hPa compares with about 1,013

TYPHOONS

hPa for the average pressure at sea level.

Japan's strongest landfalls have had pressures far below that. The Muroto typhoon of 1934 recorded about 912 hPa at Muroto Point in Kochi, one of the lowest pressures ever observed on land in Japan.

TYPHOONS

At Sea and on the Coast

By the Weather Desk

TOHOKU PACIFIC COAST: rough seas until about midday on Thursday.

OGASAWARA ISLANDS: swell from No. 27; high waves likely from the weekend as No. 29 approaches.

IZU ISLANDS AND KANTO COAST: swell continues.

FERRIES: check the shipping lines' announcements on the day of travel.

SHORE: keep away from rocks, breakwaters and river mouths while the swell is running.

FISHING: anglers on breakwaters are among the most frequent victims of high waves on fine days.

SURFERS: swell from distant storms can produce sudden large sets.

BOATS: secure moorings in the Ogasawara Islands before the weekend.

CHICHIJIMA: inside the possible storm-wind area by early Tuesday.

UPDATES: typhoon bulletins are issued every three to six hours.

POLITICS

Koja Tells the Prime Minister of His 'Strong Indignation'; She Says Japan and the United States Will Discuss Preventing a Recurrence

By Emi Kondo | Society & Local News

The governor of Okinawa, Genta Koja, met Prime Minister Sanae Takaichi on Wednesday and expressed his strong indignation over the killing of a woman in Naha, for which an American Marine has been arrested, the morning papers report.

The prime minister said that measures to prevent a recurrence would be discussed between Japan and the United States.

The meeting came on the first day of a three-day suspension of operations by the American forces in Okinawa. From Friday their personnel are under a curfew between midnight and 5 a.m. for 30 days.

Mr Koja had been expected to bring to Tokyo the demands he put on Monday to the senior American officer on the island: full co-operation with the investigation, effective measures to prevent a recurrence, and a review of the Status of Forces Agreement.

The suspect, a lance corporal aged 20 from Futenma air station, was arrested on Sunday on suspicion of robbery and murder. He denies the allegation. The woman, who was 39, was found strangled in a hotel room early on Saturday.

Ms Takaichi had already told the Diet that the government protested strongly to the United States and demanded full co-operation and tighter discipline.

The governor was elected last month with the support of the governing parties, which gives the meeting a particular edge. He cannot be dismissed in Tokyo as an opponent of the government, and his anger is shared across the political spectrum in Okinawa.

Discussions between the two governments on the conduct of American personnel usually take place through the joint committee established under the Status of Forces Agreement, and through the foreign and defence ministries.

Okinawa's politicians will judge them by results. Previous measures, including curfews after crimes in 2012 and 2016, were relaxed within months or years.

The prime minister did not commit to seeking a revision of the agreement itself, according to the reports.

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POLITICS

Representative Questions: How the Diet Answers a Prime Minister's Policy Speech

By Hana Ito | Research & Archive

The questions that began in the House of Representatives on Wednesday follow a ritual as old as the post-war Diet.

At the start of a session the prime minister delivers a policy speech setting out the government's programme, and other ministers speak on foreign policy, finance and the economy. The opposition and the governing parties then reply, through their representatives, in what are called representative questions.

Each party is allotted time roughly in proportion to its strength. Its leader or a senior member reads a series of questions from the rostrum, often for half an hour or more, covering the whole range of policy.

The prime minister and the ministers concerned then answer, also from the rostrum, usually by reading prepared replies.

The format is formal and the answers are cautious. Questions are submitted to the government in advance so that officials can draft the answers, and a minister rarely says anything not already agreed.

The questions are repeated in the House of Councillors, so that the same policies are argued twice in a few days.

Their value lies less in the answers than in the record. Each party sets out its position on the main issues of the session, and the government is committed in public to what it says.

The real cross-examination comes later, in the budget committees, where members ask questions one at a time, ministers must answer without long preparation, and the proceedings are broadcast live.

This year the questions carry particular interest because of the changed shape of the Diet. Komeito, a governing party for a quarter of a century, now questions the government from the opposition benches under a new leader.

The prime minister's answer on the consumption tax on Wednesday, that a cut was the best method and that its funding would be decided after deliberation, will be tested in that later, harder setting.

POLITICS

From Partner to Opposition: Komeito's Twenty-Six Years Beside the Liberal Democrats, and Why It Left

By Hana Ito | Research & Archive

Komeito was founded in 1964 as the political arm of Soka Gakkai, a lay Buddhist organisation that grew rapidly in the decades after the war. It has since been formally separated from the movement, which remains its main source of support.

For its first three decades it was an opposition party, often in the centre between the Liberal Democrats and the left.

In 1999 it joined the government of Keizo Obuchi in coalition with the Liberal Democrats. The partnership survived, in government and in opposition, for most of the following quarter-century.

The arrangement suited both sides. The Liberal Democrats gained a reliable bloc of votes in the Diet and, crucially, Komeito supporters' votes in single-seat constituencies across the country. Komeito gained influence over policy and a share of ministerial posts, usually the land ministry.

It also acted as a brake. On defence, on the constitution and on nuclear power, Komeito repeatedly moderated its partner's positions, to the frustration of the Liberal Democratic right.

The relationship strained after the scandal over unrecorded income from fund-raising parties in the Liberal Democratic Party's factions, which damaged both parties in the elections that followed.

When Sanae Takaichi won the leadership of the Liberal Democrats in October last year, Komeito demanded firmer action on political funds. It did not receive the assurances it wanted and announced that it would leave the coalition.

The Japan Innovation Party took its place, on terms that included a reduction in the number of lower-house seats.

In opposition Komeito has had to decide how to work with the other opposition parties while keeping its own identity.

Its new leader inherits that question.

POLITICS

The Joint Committee: Where Japan and the United States Settle the Rules for American Forces, Mostly Out of Sight

By Hana Ito | Research & Archive

When the prime minister says that Japan and the United States will discuss preventing a recurrence, much of the discussion will take place in a body few Japanese have heard of.

The Japan-U.S. Joint Committee was created by the Status of Forces Agreement of 1960 to consult on how the agreement is carried out. It meets regularly, usually every other week.

The Japanese side is led by the director-general of the foreign ministry's North American Affairs Bureau. The American side is led by a senior officer of the American forces in Japan.

Beneath it sit dozens of subcommittees and working groups dealing with facilities, aviation, the environment, criminal jurisdiction and much else.

It is where the practical arrangements are made: which land the forces may use, how aircraft noise is handled, how suspects are handed over, how accidents near bases are investigated.

Its records are largely not published. Agreements reached there are announced only selectively, and critics in Okinawa and in the Diet have long complained that it makes decisions affecting residents without public scrutiny.

Defenders of the arrangement say that discretion allows frank discussion of sensitive matters, and that the important results are made public.

Changes made through the committee are easier to achieve than changes to the agreement, which requires a treaty negotiation that neither government has been willing to begin.

The arrangement of 1995 under which the American side gives sympathetic consideration to handing over suspects before indictment in cases of murder or rape was reached in that framework, after the rape of a schoolgirl in Okinawa that September.

Whatever the two governments agree this time is likely to emerge from the same room.

POLITICS

Komeito's New Leader, Mitsunari Okamoto, Takes the Rostrum for His First Questions to the Prime Minister

By Aiko Tanaka | Senior Japan Correspondent

Mitsunari Okamoto, who became leader of Komeito at the party's convention last Saturday, put the party's questions to Prime Minister Sanae Takaichi in the House of Representatives on Wednesday.

It was his first appearance at the rostrum as leader, and the party's first set of leaders' questions since the change.

Mr Okamoto is a former chairman of the party's policy research council. NHK reported at the end of September that he had rejoined the party shortly before being chosen.

The convention also reappointed Makoto Nishida as secretary-general, Kyodo News reported.

Komeito's position in the Diet has changed completely in a year. For a quarter of a century it governed in coalition with the Liberal Democrats, providing votes in the Diet and, at election time, the organised support of its backers in the lay Buddhist movement Soka Gakkai.

It left the coalition in October last year, after Ms Takaichi was elected president of the Liberal Democratic Party, citing its partner's handling of political funds.

The Liberal Democrats then formed a new coalition with the Japan Innovation Party.

Komeito's priorities have long included measures for households with children, welfare and the reduction of nuclear weapons. As a former governing party it also knows the budget well, which makes its questions on funding harder to deflect.

Its votes matter. In a Diet in which the governing

coalition's majority is not comfortable, the stance of a party with Komeito's discipline can decide the fate of legislation.

Mr Okamoto's challenge is to establish a distinct identity in opposition without giving up the reputation for practical policy that the party built in government.

POLITICS

The Week Ahead

By the Politics Desk

THURSDAY, OCT. 8: Nobel Prize in Literature, about 8 p.m. Japan time. Markets in mainland China reopen. Draconid meteors in the evening. Nagasaki Kunchi continues.

FRIDAY, OCT. 9: Nobel Peace Prize, about 6 p.m. The American forces' curfew in Okinawa begins. Takayama autumn festival opens.

SATURDAY, OCT. 10: Climax Series first stages: Giants v DeNA at Tokyo Dome, Seibu v Nippon-Ham in Tokorozawa. Typhoon No. 29 forecast to be very strong.

SUNDAY, OCT. 11: World judo championships end with the mixed team event. Typhoon No. 28 forecast to become extratropical east of Japan.

MONDAY, OCT. 12: Sports Day. Nobel prize in economic sciences. Izumo university relay. Typhoon No. 29 nearing the Ogasawara Islands.

TUESDAY, OCT. 13: Typhoon No. 29 forecast about 510 km east-north-east of Chichijima.

WEDNESDAY, OCT. 14: Central League final stage at Koshien.

OCT. 18: Yokohama mayoral election. Asian Para Games open.

OCT. 19 TO 29: Exercise Keen Sword.

OCT. 29 AND 30: Bank of Japan policy meeting.

NOV. 3: American midterm elections.

SOCIETY

The Day in Figures

By the Data Desk

31: Japan's individual Nobel laureates, with Kenso Soai.

10: Japanese laureates in chemistry.

95: the age of Henri Kagan, his fellow laureate.

1995: the year the Soai reaction was published.

70,035.71: the Nikkei average's close, down 648.27 yen.

4,197: the TOPIX high of August 14, briefly passed on Wednesday morning.

1.5%: the rise in real wages in August, the eighth in a row.

5.9 billion yen: the station-area plan Takikawa has dropped.

950 hPa: Koguma's forecast central pressure from early Saturday.

287: nominations for this year's Nobel Peace Prize.

SOCIETY

Today's Cautions

By the Society Desk

COLD MORNINGS: lows of 6 degrees in Kushiro and 8 in Nagano; wear layers.

WIDE RANGES: Kushiro rises 15 degrees between morning and afternoon, and Kochi, Kyoto and Nagano 14.

COAST: rough seas on the Tohoku Pacific coast until midday.

SWELL: off the Ogasawara and Izu Islands and Kanto.

TYPHOON: No. 29 forecast to be very strong from early Saturday.

ISLANDS: ferry schedules may change before the holiday weekend.

LEAKS: after this week's data breaches, do not open links in unexpected messages; the consumer hotline is 188.

DRIVING: low evening sun after 5 p.m. in Tokyo; sunset is now before 5:20.

OKINAWA: the American forces' curfew begins on Friday.

HOLIDAY: plan travel early for the three-day weekend.

POLITICS



Prime Minister Sanae Takaichi at the rostrum of the House of Representatives, in a file image. Answering the first of the party leaders' questions on her policy speech, she called a cut in the consumption tax the best method and said its funding would be designed after deliberation. (Photo: WPM Productions)

POLITICS

Takaichi Calls a Cut in the Consumption Tax 'the Best Method' and Says Its Funding Will Be Designed After Deliberation

The first day of party leaders' questions brings the same answer on the money the prime minister gave on Monday

By Michael Hayes | Deputy Editor, Politics & Policy

Prime Minister Sanae Takaichi told the House of Representatives on Wednesday that cutting the consumption tax was the best method, as the questions on her policy speech began in the lower house, the morning papers report.

She said the design of the funding, and of the payments to households that are to accompany the cut, would be decided after deliberation.

The answer took the government no further than her speech on Monday, in which she promised to pass the cut in this session, said it would be paid for without deficit-financing bonds and told the country there was no need to worry.

The opposition parties had come to the chamber to ask where the money would come from. They did not leave with a figure.

Her case for the cut rests on its speed. A reduction in the tax lowers prices at the till the day it takes effect, for everyone, without the paperwork of a targeted subsidy.

Its critics, among them some of her own party's tax experts, reply that the benefit goes in proportion to

spending, so that the largest households and the richest receive the most, and that it is far more expensive than help aimed at those who need it.

Taking the eight per cent tax off food altogether would cost about five trillion yen a year, by the finance ministry's earlier estimates.

Komeito, now in opposition, put its questions through its new leader, Mitsunari Okamoto, who took the rostrum in the first leaders' questions since his election.

The questions continue, and then move to the House of Councillors. After that come the budget committees, where ministers answer one question at a time and where answers like Wednesday's are harder to sustain.

The Liberal Democrats' tax commission began its autumn work this week with the funding question at the top of its agenda.

The photograph shows the prime minister at the rostrum of the lower house.

where the opposition can question him directly and at length, and where the prime minister, who appointed him, must answer for him.

Mr Yana has said he will not resign.

POLITICS

Three, Five, Eight, Ten: A Short History of the Consumption Tax, and of the Governments It Cost

By Hana Ito | Research & Archive

The tax the prime minister wants to cut has a reputation for ending careers.

It was introduced in April 1989 at three per cent under Prime Minister Noboru Takeshita, after two earlier attempts had failed. Takeshita resigned that June, though a political funding scandal weighed more heavily than the tax.

It was raised to five per cent in April 1997 under Ryutaro Hashimoto. The economy fell into recession later that year, and the increase has been blamed for it ever since, fairly or not.

Shinzo Abe raised it to eight per cent in April 2014 and, after twice postponing the next step, to ten per cent in October 2019.

The 2019 increase brought a new feature: a reduced rate of eight per cent on food and non-alcoholic drinks, and on newspapers delivered by subscription. Restaurant meals and alcohol pay the full ten.

The tax is now the largest single source of national tax revenue. By law its proceeds go to social security: pensions, medical care, nursing care and measures for children.

Its advantages, for a finance ministry, are its stability, since consumption varies less than income or profit, and its breadth, since everyone pays.

Its disadvantage, for a politician, is that everyone notices. And because poorer households spend a larger share of their income, it weighs more heavily on them.

The reduced rate on food was meant to soften that.

The prime minister's plan would go further, lowering or removing the tax on food for a period.

Cutting the consumption tax has been proposed by opposition parties at almost every election. It is unusual for a Liberal Democratic prime minister to make it her own policy.

POLITICS

Second Supplementary Budget Would Fund Recovery From Earthquake and Heavy-Rain Damage

By Yuki Saito | Economics & Finance Correspondent

The second supplementary budget the government is considering would pay for recovery from earthquake and heavy-rain damage, the morning papers report.

On Wednesday the budget was described as small and concentrated on public works and disaster response. Thursday's reports add the purpose.

The government has not announced the size or the timing.

Recovery spending is the classic case for a supplementary budget. The public finance law allows one when spending becomes necessary after the main budget has been drawn up, and disasters are the commonest reason.

Japan's disaster budgets have grown with the frequency of heavy rain. Rivers burst their banks more often than in the past, and the repair of roads, embankments and farmland takes years.

The ground in parts of Chiba and Kanagawa is still loose after Typhoon No. 25, and forecasters have warned of landslides.

Public works can be financed by construction bonds, which the law allows. That distinguishes this budget from the tax cut, which the prime minister has promised to fund without deficit-financing bonds.

The bond market is watching. The coupon on ten-year government bonds was set at 3.1 per cent on Tuesday, the highest since 1996.

A supplementary budget needs the approval of both houses, and the opposition parties rarely oppose money for disaster recovery.

Their questions will be whether the budget stays small, and whether other spending is added to it on its way through the government.

POLITICS

Aichi Assembly's Vice Chairman to Resign After Clash With Security Guards Over His Car at an Asian Games Venue

By Naomi Kato | Culture & Society Editor

The vice chairman of the Aichi prefectural assembly is to resign after a dispute with security guards over the passage of his private car at a venue of the Asian Games, the morning papers report.

The Games, held in Aichi and Nagoya, ended on Sunday, October 4. Japan won a record 83 gold medals.

Security at the venues was tight. Vehicle access was restricted to accredited cars, and guards had instructions to check every one.

The reports did not give details of what was said at the gate or name the venue concerned. The dispute became public after the Games, and the vice chairman's position became untenable.

Assembly officers are expected to set an example at events their prefecture hosts. A senior member insisting on privileges that guards were told not to grant is the kind of story that ends careers in local politics.

The Games themselves had their troubles. During the first days Thai media reported that members of Thailand's team were kept waiting for hours in a hotel lobby before they could enter their rooms, blaming the Japanese side, Daily Sports reported in September.

Kyodo News reported other problems, including a national anthem played in error and transport buses that failed to arrive.

The governor of Aichi, Hideaki Omura, has also drawn criticism locally for remarks about the Thai team, according to the reports.

The prefecture will review the operation of the Games as a whole. The Asian Para Games, which open on October 18, use many of the same venues

and staff.

The assembly is expected to choose a new vice chairman when it next meets.

POLITICS

Politics Digest

By the Politics Desk

TAX: The prime minister calls a cut in the consumption tax the best method; the funding and payments will be designed after deliberation.

OKINAWA: Governor Genta Koja expresses strong indignation to the prime minister; Japan and the United States are to discuss preventing a recurrence.

CURFEW: American personnel in Okinawa are under a midnight-to-5 a.m. curfew from Friday for 30 days.

YANA: The agriculture minister denies lobbying the land ministry and says there is no record of a meeting.

KOMEITO: The new leader, Mitsunari Okamoto, puts his first questions to the prime minister.

BUDGET: The second supplementary budget would fund recovery from earthquake and heavy-rain damage.

AICHI: The prefectural assembly's vice chairman is to resign over a dispute with security guards at an Asian Games venue.

SEATS: The inter-party council on reducing lower-house seats aims for proposals by the end of October.

DEFENCE: The revision of the three security documents, including the question of nuclear-powered submarines, continues towards December.

ELECTIONS: Yokohama elects a mayor on October 18.

INTERNATIONAL

The Rule of Three: Why a Nobel Prize Can Be Shared by No More Than Three People

By Hana Ito | Research & Archive

The statutes of the Nobel Foundation say that a prize may be divided equally between two works, or awarded jointly to two or three people who produced a work together, and that in no case may it be shared among more than three.

The limit is simple to state and hard to live with, because modern science is rarely done by three people.

Henri Kagan's omission in 2001 is a familiar example in chemistry. The prize honoured catalytic asymmetric synthesis, a field to which his work of the early 1970s was fundamental, but three laureates had already been chosen.

In 2008 the prize for the green fluorescent protein went to Osamu Shimomura of Japan and the Americans Martin Chalfie and Roger Tsien. Douglas Prasher, who had first cloned the protein's gene and given it to Mr Chalfie and Mr Tsien, was not among them.

In physics, the prize of 2013 for the mechanism that gives particles mass went to Peter Higgs and François Englert. Several other theorists had published similar work in 1964.

The Peace Prize can also be given to organisations, which count as a single laureate however many people they represent. Japan's atomic-bomb survivors' organisation, Nihon Hidankyo, received it in 2024.

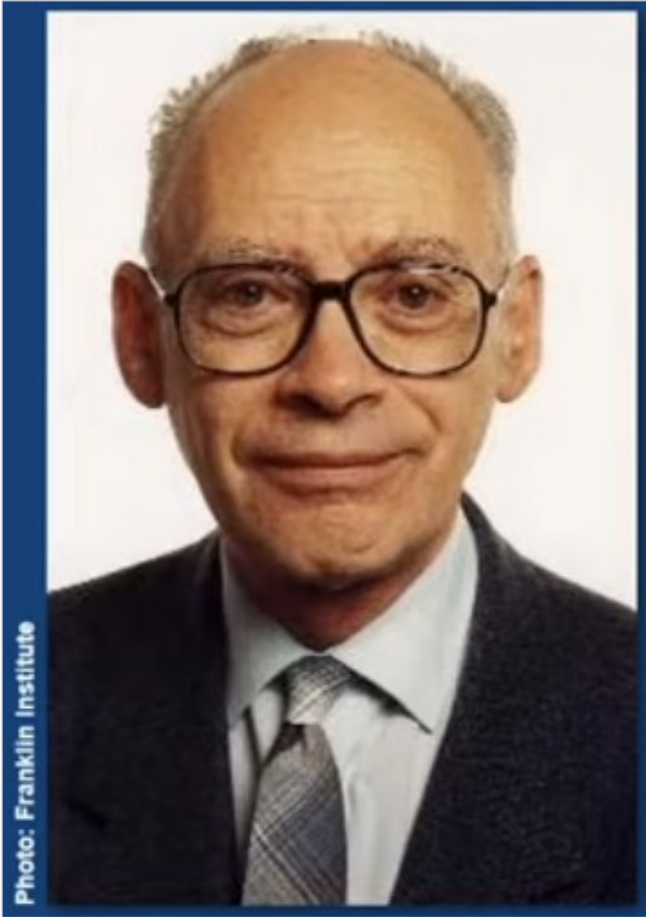
The prizes are also not given after death, unless the laureate dies after the announcement. Several people widely expected to share prizes died before Stockholm reached them.

Some scientists argue that the prizes should be reformed to reward teams and collaborations. The foundation has shown no sign of changing its rules.

This week's prizes have shown the rule in both directions. The physics prize went to one man, Francis Halzen, for an observatory run by a collaboration of several hundred scientists. The chemistry prize went to two men from different countries who did their decisive work separately.

Mr Kagan's case also shows that patience can be rewarded. He has been recognised for a different finding from the one for which he was passed over.

INTERNATIONAL



Henri Kagan, 95, professor emeritus of the Université Paris-Sud, as shown in the Royal Swedish Academy of Sciences' announcement on Wednesday. (Image supplied for this edition; portrait: Franklin Institute)

INTERNATIONAL

Henri Kagan, 95, Receives the Prize That Passed Him by in 2001

By Jonathan Mercer | Senior Editor, International Desk

Twenty-five years ago the Nobel Prize in Chemistry was given for the field Henri Kagan had helped to found, and he was not among the winners.

On Wednesday the Royal Swedish Academy of Sciences put that right, after a fashion, by awarding him the prize with Kenso Soai of Tokyo University of Science for a different discovery.

Mr Kagan, a professor emeritus of the Université Paris-Sud at Orsay, outside Paris, was born on December 15, 1930, in Boulogne-Billancourt. He is 95.

At that age he is among the oldest people ever to be named a Nobel laureate. The oldest, the American John Goodenough, was 97 when he shared the chemistry prize in 2019 for the lithium-ion battery, with Akira Yoshino of Japan among his fellow laureates.

A chemist of the Orsay school

Mr Kagan studied at the Sorbonne and at the École nationale supérieure de chimie de Paris, took his doctorate under Jean Jacques at the Collège de France and worked with Alain Horeau, a pioneer of the study of handed molecules, before building his own laboratory at Orsay. He is a member of the French Academy of Sciences.

In 1972 his group published a catalyst built around a handed molecule of its own design, called DIOP, which allowed rhodium to add hydrogen to other molecules with a marked preference for one mirror form. Its two halves were identical, a symmetry that became a guiding idea in the design of such catalysts.

In 1980 he and his colleagues described a mild way of preparing samarium iodide, a reagent that organic chemists around the world now use to reduce molecules and join them together.

In 1986 came the observation the academy has now rewarded: that a catalyst only partly in one mirror form could give a product of much higher purity than itself, or lower, departing from the straight line that common sense expected. He also worked out mathematical models to explain why.

Left out by the rule of three

The prize of 2001 went to William Knowles of the United States and Ryoji Noyori of Japan for catalysts that add hydrogen selectively, and to K. Barry Sharpless of the United States for catalysts that add oxygen. Because the statutes allow no more than three laureates, many chemists said at the time that Mr Kagan had been unlucky.

The same year, he shared the Wolf Prize in Chemistry, awarded in Israel and often seen as a forecast of Stockholm, with Mr Noyori and Mr Sharpless.

Honours in Japan

He has long been a familiar figure in Japanese chemistry. In 2002 he received the Ryoji Noyori Prize, awarded by the Society of Synthetic Organic Chemistry, Japan, and he has also received the Nagoya Medal of Organic Chemistry and an award for eminent scientists from the Japan Society for the

Promotion of Science.

The Franklin Institute in Philadelphia, which took the portrait shown here, gave him its Benjamin Franklin Medal in 2005.

Paris-Sud no longer exists under that name. It merged in 2020 into the new Université Paris-Saclay, which has claimed its laureate.

The photograph is from the academy's announcement in Stockholm.

INTERNATIONAL

From Fluorine to Molecular Machines: The French Line in Chemistry That Henri Kagan Now Joins

By Hana Ito | Research & Archive

France has been honoured in chemistry since the early years of the prize.

Henri Moissan won in 1906 for isolating fluorine, the most reactive of the elements, and for the electric furnace he built to reach temperatures no one had reached before.

Marie Curie, born in Warsaw and working in Paris, received the chemistry prize in 1911 for the discovery of radium and polonium, eight years after sharing the physics prize. She remains the only person to have won Nobel prizes in two different sciences.

In 1912 the prize went to two Frenchmen at once: Victor Grignard, for the reagents that carry his name and are still taught to every chemistry student, and Paul Sabatier, for adding hydrogen to organic compounds with the help of finely divided metals.

Irène Joliot-Curie, Marie Curie's daughter, and her husband Frédéric Joliot shared the prize in 1935 for making new radioactive elements.

Then came a long gap. Jean-Marie Lehn of Strasbourg shared the prize in 1987 for supramolecular chemistry, the study of molecules that recognise and hold each other.

Yves Chauvin shared it in 2005 for explaining metathesis, a reaction that swaps the partners of carbon double bonds and is used to make medicines and plastics.

Jean-Pierre Sauvage, also of Strasbourg, shared it in 2016 for molecular machines. Emmanuelle Charpentier, working in Berlin, shared it in 2020 with Jennifer Doudna of the United States for the gene-editing tool CRISPR.

Louis Pasteur, who did not live to see the prizes, belongs at the head of the list for Wednesday's purposes. In 1848, as a young chemist, he sorted the crystals of a salt of tartaric acid by hand into two mirror-image shapes and showed that their solutions turned polarised light in opposite directions. It was the discovery of molecular handedness.

Mr Kagan's prize is thus, in a sense, a French story that began 178 years ago and has now been completed in Japan's company.

INTERNATIONAL

Orsay: The Campus the Joliot-Curies Founded South of Paris, and the University It Became

By Jonathan Mercer | Senior Editor, International Desk

The university named in Wednesday's announcement is a French institution with a distinguished past and a new name.

Its origins lie in the 1950s, when the physics of the atomic nucleus needed space and large machines that central Paris could not provide. Irène Joliot-Curie and Frédéric Joliot-Curie pressed for laboratories to be built at Orsay, in the countryside south-west of the city, and the Faculty of Sciences of the University of Paris established a campus there.

In 1971, after the reorganisation of the French universities that followed the unrest of 1968, the campus became the core of the Université Paris-Sud, also known as Paris XI.

It became one of the country's leading scientific universities. Pierre-Gilles de Gennes, who won the Nobel Prize in Physics in 1991, worked there in the 1960s, and Albert Fert, the physics laureate of 2007, did his prize-winning work on giant magnetoresistance in a laboratory at Orsay.

Henri Kagan's laboratory of asymmetric synthesis was part of the same tradition.

In 2020 Paris-Sud was merged with several engineering schools and research institutes on the

plateau of Saclay to form the Université Paris-Saclay.

The merger was part of a long French effort to build universities large enough to compete with the biggest in the world, and in particular to rise in the international rankings, in which French institutions, scattered among many small universities and elite schools, had fared badly.

Paris-Saclay has since placed highest among French universities in the best-known of those rankings, compiled in Shanghai.

Laboratories and companies have been encouraged to cluster nearby, and the plateau is to be served by a new automatic metro line, part of the Grand Paris Express network.

For Mr Kagan, the prize will be celebrated by an institution that did not exist when he made his discovery, on the campus where he made it.

INTERNATIONAL

Peace Prize Announced Tomorrow in Oslo From 287 Nominations; Trump and Zelenskyy Among Those Known to Have Been Put Forward

By Jonathan Mercer | Senior Editor, International Desk

The Norwegian Nobel Committee announces the Nobel Peace Prize in Oslo tomorrow, at about 6 p.m. Japan time.

There are 287 candidates this year, 208 individuals and 79 organisations, the committee has said. The names are kept secret for 50 years, but those who nominate are free to say whom they have put forward, and many do.

Among the nominations made public are President Donald Trump of the United States and President Volodymyr Zelenskyy of Ukraine, as well as Yulia Navalnaya, the widow of the Russian opposition leader Alexei Navalny, and Pope Leo XIV.

Organisations put forward include the International Criminal Court and the International Court of Justice, the United Nations agency for Palestinian refugees, and Sudan's Emergency Response Rooms, the networks of volunteers who have kept food and medical care going during that country's civil war.

A nomination is not an endorsement. Members of national parliaments and governments, university professors in certain fields and former laureates are among those entitled to nominate, and the bar is low.

Bookmakers have offered odds on Sir David Attenborough, the British naturalist, and on Mr Trump, among others.

Mr Trump has spoken often of his wish to receive the prize, and has said that his role in ending wars deserves it. The committee, whose five members are chosen by the Norwegian parliament, is formally independent of the Norwegian government.

Last year's prize went to María Corina Machado, the Venezuelan opposition leader, for her struggle for democracy in her country.

In 2024 it was awarded to Nihon Hidankyo, the confederation of survivors of the atomic bombings of Hiroshima and Nagasaki, for its efforts for a world without nuclear weapons.

The prize is presented in Oslo on December 10, the anniversary of Alfred Nobel's death, on the same day as the other prizes are presented in Stockholm.

INTERNATIONAL

Japan and the Peace Prize: Eisaku Sato in 1974, the Survivors of the Bombs in 2024

By Hana Ito | Research & Archive

Only one Japanese individual has received the Nobel Peace Prize: Eisaku Sato, who was prime minister from 1964 to 1972.

He shared the prize of 1974 with Seán MacBride of Ireland. The committee cited his three non-nuclear principles, that Japan would not possess, produce or permit the introduction of nuclear weapons, and his signature of the Treaty on the Non-Proliferation of Nuclear Weapons.

The award was controversial from the start. Critics in Japan pointed to the return of Okinawa in 1972, which Sato negotiated, and to the arrangements with the United States that accompanied it.

Documents that came to light decades later showed that Sato had agreed in secret that American nuclear weapons could be brought back to Okinawa in an

emergency.

Fifty years later the prize returned to Japan through Nihon Hidankyo, the Japan Confederation of A- and H-Bomb Sufferers Organisations, founded in 1956.

The committee honoured the survivors, known as hibakusha, for bearing witness to what nuclear weapons do. Their testimony, it said, had helped to establish a taboo against the use of such weapons.

The survivors are now old. Their average age is past 85, and the number holding the government's certificate of survivor status is falling year by year.

Japanese citizens' groups have campaigned for years for the prize to be given to the Japanese people who have upheld Article 9 of the constitution, which renounces war. It has not been.

Japan's other links with the prize run through its laureates in the sciences, who number 28 of the country's 31 individual laureates; two more won in literature.

Tomorrow's announcement comes in a week that has already brought Japan one prize.

INTERNATIONAL

The Week's Laureates So Far, and What Is to Come

By the International Desk

MONDAY, OCTOBER 5. PHYSIOLOGY OR MEDICINE: Karl Deisseroth of Stanford University, United States; Peter Hegemann of the Humboldt University of Berlin and Georg Nagel of the University of Würzburg, Germany. For optogenetics, the control of nerve cells with light.

TUESDAY, OCTOBER 6. PHYSICS: Francis Halzen of the University of Wisconsin-Madison, United States. For the detection of high-energy neutrinos from space with the IceCube observatory at the South Pole.

WEDNESDAY, OCTOBER 7. CHEMISTRY: Henri Kagan of the Université Paris-Sud, France, and Kenso Soai of Tokyo University of Science, Japan. For the discovery of non-linear effects and autocatalysis in asymmetric organic synthesis.

TODAY, OCTOBER 8. LITERATURE: announced by the Swedish Academy in Stockholm at about 8 p.m. Japan time.

FRIDAY, OCTOBER 9. PEACE: announced by the Norwegian Nobel Committee in Oslo at about 6 p.m. Japan time.

MONDAY, OCTOBER 12. ECONOMIC SCIENCES: the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, announced in Stockholm in the evening, Japan time.

BY COUNTRY OF WORK SO FAR: United States 2; Germany 2; France 1; Japan 1.

JAPAN: Kenso Soai is the country's 31st individual laureate and its tenth in chemistry. Japan also won the chemistry prize last year, through Susumu Kitagawa, and the medicine prize, through Shimon Sakaguchi.

CEREMONIES: December 10 in Stockholm and Oslo, the anniversary of Alfred Nobel's death in 1896.

FIRST AWARDED: 1901. The prize in economic sciences was established in 1968 by Sweden's central bank and first awarded in 1969.

INTERNATIONAL

Mainland China's Markets Reopen Today After the Week-Long National Day Holiday

By Yuki Saito | Economics & Finance Correspondent

The stock markets of mainland China reopen today after the National Day holiday, which closed them from Thursday, October 1, to Wednesday.

The exchanges in Shanghai and Shenzhen, and the Stock Connect links that let investors in Hong Kong trade mainland shares and mainland investors trade Hong Kong ones, were shut for the whole of the week, the financial news service investingLive noted. Hong Kong's own market reopened earlier.

The holiday, known as Golden Week, is one of the two great travelling seasons of the Chinese year, with the Lunar New Year. Hundreds of millions of journeys are made within the country, and spending on travel, hotels, restaurants and cinemas is watched as a gauge of consumer confidence.

Investors will be looking for those figures, and for any change in the policies of Beijing, when trading resumes. Trading in Shanghai begins at 9:30 a.m.

INTERNATIONAL

local time, 10:30 a.m. in Japan.

Their reopening matters to Tokyo. China is Japan's largest trading partner, and the shares of Japanese manufacturers that sell machinery, components and consumer goods there often move with the mood in Shanghai.

The holiday coincided with a strong week in Tokyo. The Nikkei average closed above 70,000 on Tuesday for the first time since July 1 and fell back by 648 yen on Wednesday, though it held above that level.

Relations between Tokyo and Beijing remain cool. Chinese tourism to Japan, which was booming two years ago, has been affected by the disputes between the two governments.

China's economy has faced a long slump in its property market and weak consumer spending, and the government has announced a series of measures meant to support growth.

The yuan's onshore market also reopens today. It, too, was closed during the holiday, while the currency continued to trade offshore.

South Korea's markets close tomorrow for Hangul Day, the holiday that celebrates the Korean alphabet.

INTERNATIONAL

Hangul Day: Why South Korea's Markets Close on Friday to Honour an Alphabet of 1446

By Jonathan Mercer | Senior Editor, International Desk

South Korea takes a holiday on Friday, October 9, for one of the few national days anywhere dedicated to an alphabet.

Hangul Day commemorates the promulgation in 1446 of the Korean script, then called Hunminjeongeum, the proper sounds for the instruction of the people, by King Sejong of the Joseon dynasty.

Before hangul, Koreans wrote with Chinese characters, which took years to learn and kept literacy largely to the educated elite. Sejong and his scholars devised an alphabet of consonants and vowels whose shapes were designed in part to reflect the position of the mouth and tongue in making the sounds.

The script was resisted for centuries by officials devoted to classical Chinese, and came into general official use only from the end of the 19th century. It is now admired by linguists as one of the most logical writing systems ever devised.

October 9 was a public holiday from 1949, was dropped in 1991 amid concerns about the number of days off, and was restored as a holiday in 2013.

North Korea marks the creation of the alphabet on a different date, in January, and calls the script chosongul.

The Korean exchange closes for the day, so investors in Tokyo will find Seoul's market shut on Friday, a day after mainland China's markets reopen from their own week-long holiday.

Hangul has also become an object of interest in Japan, where Korean dramas and music have drawn many to learn the language. Korean is among the most popular foreign languages studied by young Japanese.

Relations between Tokyo and Seoul have been relatively steady over the past few years, after a long period of tension over history and trade.

For South Koreans the holiday falls between the Chuseok harvest festival, which this year came in late September, and the end of autumn, a season of travel and festivals.

INTERNATIONAL

North Korea's Ruling Party Turns 81 on Saturday: Parades, Missiles and a Date Japan Watches

By Rachel Kim | Washington-Tokyo Liaison

Saturday, October 10, is the anniversary of the founding of the Workers' Party of Korea, the ruling party of North Korea, in 1945.

The date is one of the most important in the North Korean calendar, and the regime has often used it for military displays.

Last year, for the party's 80th anniversary, Pyongyang staged a large military parade attended by senior guests from China and Russia, and displayed a new intercontinental ballistic missile, signalling its ties with both powers and its determination to develop weapons capable of reaching the United States.

Anniversaries ending in zero or five are usually marked on the largest scale. It is not yet known how this year's, the 81st, will be marked.

Japan watches such dates closely. North Korea's missile tests have repeatedly sent missiles into the sea within or near Japan's exclusive economic zone, and on several occasions over Japanese territory, triggering emergency alerts in northern Japan.

The government's position is that North Korea's nuclear and missile programmes are a grave and imminent threat to Japan's security, a judgment set out in the national security documents now being revised.

The abduction of Japanese citizens by North Korean agents in the 1970s and 1980s remains unresolved, and successive prime ministers, Ms Takaichi among them, have called it a top priority. Almost all of the abductees' parents have died without seeing their children return.

North Korea's alignment with Russia, deepened since the war in Ukraine began, has added to the concern in Tokyo and Washington. North Korean troops have fought alongside Russian forces, according to the South Korean, Ukrainian and Western governments.

Japan, the United States and South Korea share missile warning data in real time under an arrangement begun at the end of 2023.

Pyongyang's state media usually report the anniversary celebrations the following day, and the scale of any parade is often clear only then.

Exercise Keen Sword, the joint Japanese-American exercise, begins on October 19, nine days after the anniversary.

INTERNATIONAL

World Digest

By the International Desk

STOCKHOLM: The Nobel Prize in Chemistry goes to Henri Kagan of France and Kenso Soai of Japan for the discovery of non-linear effects and autocatalysis in asymmetric organic synthesis. The prize in literature is announced this evening, at about 8 p.m. Japan time.

PARIS: Mr Kagan, 95, is a professor emeritus of the Université Paris-Sud, which became part of the new Université Paris-Saclay in 2020.

OSLO: The Nobel Peace Prize is announced tomorrow. There are 287 nominations.

BEIJING: Markets in mainland China reopen this morning after the National Day holiday.

PYONGYANG: North Korea's ruling party marks the anniversary of its founding on Saturday, October 10, a date on which the country has staged military parades in the past.

WASHINGTON: The American midterm elections are on November 3, less than four weeks away. All 435 seats in the House of Representatives and about a third of the Senate are at stake.

HONOLULU: The National Weather Service had Honolulu under a flood watch on Wednesday, with heavy rain possible.

MADISON: Francis Halzen, awarded the physics prize on Tuesday, is a professor at the University of Wisconsin-Madison, the lead institution of the IceCube neutrino observatory, which is funded mainly by the American National Science Foundation.

SEOUL: South Korea's markets close tomorrow for Hangul Day, which marks the creation of the Korean alphabet in 1446.

BAKU: The world judo championships continue in the Azerbaijani capital. Haruka Kaju of Japan won the women's 63 kg title on Wednesday for the second year running.

GAZA: The ceasefire between Israel and Hamas reaches its first anniversary on Saturday. It has held in name while deadly strikes and clashes have continued, according to reports from the territory.

ECONOMY

Real Wages Rise 1.5 Per Cent in August, the Eighth Monthly Increase in a Row and the Longest Run in Ten Years

By Yuki Saito | Economics & Finance Correspondent

Wages adjusted for prices rose 1.5 per cent in August from a year earlier, the eighth consecutive monthly increase, according to the preliminary figures of the

labour ministry's monthly survey, the morning papers report.

It is the first run of eight consecutive rises in ten years, according to the reports.

The run began in January. For most of the previous four years, real wages fell, because prices rose faster than pay, and the decline became one of the most quoted measures of the squeeze on Japanese households.

Two forces have turned the figure round. Pay has continued to rise after several years of large settlements in the spring wage negotiations between companies and unions, and inflation has slowed from its peak, helped in particular by cheaper petrol since the abolition of the provisional petrol tax at the end of last year.

The government and the Bank of Japan have both said that wage growth that outpaces inflation is the condition for a lasting escape from deflation. Eight months of it is the strongest evidence yet that the condition is being met.

What the figure does not show

The survey covers businesses with five or more employees, so the smallest firms, where pay has risen most slowly, are outside it.

Its averages also mix full-time and part-time workers. A change in the proportion of part-time workers can move average wages without any individual's pay changing.

Summer bonuses are paid in June and July in most companies, so August reflects mainly regular pay, which is the more reliable guide to the trend.

The preliminary figures are often revised when the final figures are published, usually by a few tenths of a point.

The politics of the number

The figures arrive in the middle of a debate about how to help households. The prime minister argues for a cut in the consumption tax. Her critics argue that rising real wages show that help should be targeted, not universal.

For the Bank of Japan, whose policy rate now stands at 1.25 per cent, the figures support the case that the economy can bear further increases. Its governor, Kazuo Ueda, said this week that underlying inflation was approaching two per cent.

ECONOMY

Nikkei and TOPIX: Two Measures of the Same Market, and Why They Do Not Always Agree

By Kenta Sakamoto | Data & Visualization

Japan's stock market is reported every evening through two numbers, and on days like Wednesday they tell slightly different stories.

The Nikkei Stock Average, published by Nikkei Inc., follows 225 large companies listed on the Prime market of the Tokyo Stock Exchange. It descends from an average first calculated in 1950.

It is a price-weighted average. Broadly, the prices of the 225 shares are added up and divided by a figure, the divisor, which is adjusted whenever a company joins or leaves the average or splits its shares, so that such changes do not make the number jump.

In such an average a share priced at 50,000 yen counts for a hundred times as much as one priced at 500 yen, whatever the size of the companies. Nikkei applies adjustments to limit the influence of the most expensive shares, but a handful still carry a large part of the weight.

Fast Retailing, the owner of Uniqlo, Tokyo Electron, Advantest and SoftBank Group are among the heaviest. A big move in any of them can shift the average by hundreds of yen on its own.

The TOPIX, the Tokyo Stock Price Index, is calculated by the exchange group. It covers a much larger number of companies and weights each by the market value of the shares freely available for trading, as most indices in other countries do.

Its base is the value of the market on January 4, 1968, set at 100. A TOPIX of 4,154 means the market is worth about 41 times what it was then, before dividends.

Because large banks, carmakers and trading houses weigh heavily in the TOPIX, it reflects the old industrial economy as well as the new technology companies.

So when chip shares fall and the rest of the market is steadier, the Nikkei falls further than the TOPIX, as it did on Wednesday. When banks lead, the TOPIX can outpace the Nikkei.

Professional investors mostly measure themselves against the TOPIX. The Nikkei, the older and more familiar number, is the one quoted on the evening news.

ECONOMY

Tokyo Electron and Disco: The Companies Whose Machines Make the Chips, and Why Their Shares Swing

By Ethan Cole | Technology & Science Editor

Japan makes few of the world's most advanced chips. It makes many of the machines and materials without which they could not be made at all, and two of the companies sold on Wednesday show how.

Tokyo Electron, founded in 1963, is the largest Japanese maker of semiconductor manufacturing equipment and one of the largest in the world.

Its best-known machines are coater-developers, which spread the light-sensitive coating on a silicon wafer before its circuit pattern is printed and develop the pattern afterwards. In that step it has a commanding share of the world market. It also makes machines that etch, deposit and clean.

Disco, whose origins go back to a maker of grinding wheels founded in Hiroshima Prefecture in 1937, makes the precision saws and grinders that thin silicon wafers and cut them into individual chips.

That once humble step has become critical. The chips used for artificial intelligence are stacked and packaged in ways that need wafers ground extremely thin and cut extremely cleanly, and Disco's machines lead the field.

Advantest, the third name in Wednesday's selling, makes the machines that test chips electrically before they are shipped. Its business was explained in these pages on Tuesday.

All three have benefited from the race to build data centres for artificial intelligence, and their shares have risen steeply.

That is also why they fall steeply. Their prices reflect expectations of years of rapid growth, and any hint that spending on AI might slow, or that export controls might tighten, can send them down several per cent in a day.

The controls matter. The United States has restricted the sale of advanced chip-making equipment to China, and Japan has imposed controls of its own on certain equipment since 2023.

For the Nikkei average, the moves of these three companies, with their high share prices, are often the difference between a good day and a bad one.

ECONOMY

Markets at a Glance

By the Markets Desk

NIKKEI AVERAGE (Wednesday close): 70,035.71, down 648.27 yen. First fall in three sessions; held above 70,000.

NIKKEI, TUESDAY: 70,683.98, up 737.12 yen, the first close above 70,000 since July 1.

TOPIX: 4,154.11, down 29.45 points. Rose briefly above its August 14 high of 4,197 in the morning.

SOLD: AI and semiconductor shares, among them Advantest, Tokyo Electron and Disco, and banks.

BONDS: Ten-year government bond coupon set at 3.1 per cent this week, the highest since August 1996. Long-term rate 3.105 per cent on Tuesday.

YEN: about 158 to the dollar early in the week.

BANK OF JAPAN: policy rate 1.25 per cent. Next meeting October 29 and 30.

REAL WAGES: August, up 1.5 per cent from a year earlier. Eighth rise in a row.

CHINA: Mainland markets reopen today after the National Day holiday.

BREWERS: compulsory investigation of four beer companies by the Fair Trade Commission on suspicion of fixing shipping prices.

THIS WEEK: Nobel prize in economic sciences announced on Monday, October 12.

ECONOMY



The Tokyo Stock Exchange at Kabutocho. The Nikkei average fell 648 yen on Wednesday to 70,035.71, its first fall in three sessions, but held above 70,000; the TOPIX rose briefly in the morning above its August 14 high. (Photo: TG2 (CC))

ECONOMY

Nikkei Gives Back 648 Yen but Holds Above 70,000 as Chip Makers and Banks Are Sold; TOPIX Touches a New High in the Morning

The first fall in three sessions follows Tuesday's close above 70,000, the first since July 1

By Yuki Saito | Economics & Finance Correspondent

Tokyo shares fell on Wednesday for the first time in three sessions, but the Nikkei average held the line it had crossed the day before.

The average closed 648.27 yen lower at 70,035.71, Nikkei reports. On Tuesday it had risen by 737.12 yen to 70,683.98, its first close above 70,000 since July 1.

The broader TOPIX index fell 29.45 points to 4,154.11. In the morning it rose briefly above 4,197, the high it had reached on August 14, before the selling took hold.

The selling was concentrated in two groups: shares linked to artificial intelligence and semiconductors, and the banks.

Advantest, which makes the machines that test chips, Tokyo Electron, the country's largest maker of chip-manufacturing equipment, and Disco, which makes the machines that cut and grind silicon wafers, were among the shares sold.

Why three shares can move an average

Those three companies matter more to the Nikkei average than their number suggests. The average is calculated from share prices, not from the size of companies, so the most expensive shares carry the most weight, and the chip-equipment makers are among the heaviest.

That is one reason the TOPIX, which weights companies by the value of their shares available to

investors, fell by a smaller proportion: about 0.7 per cent, against about 0.9 per cent for the Nikkei.

Bank shares have been among the beneficiaries of rising interest rates, which improve the margins the banks earn on lending. The coupon on ten-year government bonds was set at 3.1 per cent this week, the highest since 1996.

A pause, not a turn

A fall of less than one per cent after a rise of more than one per cent is, by the standards of this year, an ordinary day. The question for investors is whether the market can build on 70,000 or will slip back below it, as it did after July 1.

Several tests are close. Mainland China's markets reopen today after a week-long holiday. American banks begin reporting their results for the July to September quarter in the middle of the month. And the Bank of Japan holds its next policy meeting on October 29 and 30.

The real wage figures reported on Thursday morning, the eighth monthly rise in a row, give some support to the argument that Japan's recovery is reaching households, which have long been the missing piece.

The photograph shows the Tokyo Stock Exchange in Kabutocho.

understating wages. The figures were corrected and procedures changed.

Its sample is rotated periodically, which can produce jumps in the data. Economists often look at figures for establishments that were in the sample in both years for a cleaner comparison.

Other measures exist. The national accounts estimate total employee compensation, and the results of the spring wage negotiations, compiled by the Rengo union federation, show agreed rises in large companies.

None is perfect. But a run of eight months in which the main measure has risen is not an accident of statistics.

ECONOMY

Shunto: The Spring Wage Talks Behind the Rise in Real Wages, and Two Years of Five Per Cent

By Yuki Saito | Economics & Finance Correspondent

The rise in real wages reported this week rests on a Japanese institution that dates from 1955: shunto, the spring wage offensive.

Each year, unions in many industries negotiate with employers at about the same time, in February and March, so that the settlements reached by the largest companies set a pattern for others.

The first round was organised by unions in eight industries, which judged that bargaining together gave them more strength than bargaining company by company. The practice spread until it became the main mechanism for setting pay in Japan.

Rengo, the Japanese Trade Union Confederation, formed in 1989, now coordinates the unions' demands

and publishes the results.

In the long years of deflation the settlements were small, often little more than the automatic increases that come with seniority. Many unions asked for job security rather than pay.

That changed with the return of inflation. In 2024 Rengo's final tally showed an average increase of 5.10 per cent, the first above five per cent in 33 years. In 2025 the figure rose to 5.25 per cent.

Those settlements, and the pressure of a shortage of workers, lifted pay across the economy. As inflation slowed, the gains began to show up as rising real wages.

The settlements apply mainly to large companies with unions, which employ a minority of workers. Small and medium-sized companies, which employ most Japanese, often follow at a distance, and the government has pressed large companies to let their suppliers pass on higher labour costs in their prices.

Part-time and fixed-term workers, a large share of the workforce, are covered only in part, though their hourly pay has also risen with the minimum wage.

The Bank of Japan watches the spring round more closely than almost any other indicator, because it shows whether wage growth is becoming a habit. Eight months of rising real wages suggest that it is.

ECONOMY

Autumn Vegetables Grow Dearer After a Long Spell of Rain, and the Sankei Calls for Watchfulness Over Prices

By Grace Park | Food & Restaurants

The prices of autumn vegetables are rising in the aftermath of a long spell of rain, the Sankei Shimbun says in an editorial on Thursday.

Rain at the wrong time harms vegetables in several ways. Fields that stay wet rot roots and spread disease, the lack of sunshine slows growth, and farmers cannot get into their fields to plant or harvest.

Leafy vegetables are the most vulnerable. They grow quickly, are harvested quickly and cannot be stored, so a few weeks of bad weather pass almost at once into the shops.

Autumn is also a season of transition in the vegetable trade, when supply shifts from the cool highlands, which feed the cities in summer, to the plains near the cities. A disruption in that handover can leave a gap.

Prices of fresh vegetables typically settle within weeks once the weather improves, as new crops come in. Thursday's map shows sunshine across the country from Hokkaido to Kyushu, which will help.

The rise comes at a sensitive time for household budgets. The government has made the cost of food a priority, and the prime minister's proposed cut in the consumption tax on food is meant to bring relief at the till.

Fresh food is excluded from the measure of core inflation that the Bank of Japan and most economists watch, precisely because its prices swing with the weather. But it is the part of inflation shoppers see first.

The farm ministry publishes a weekly survey of retail prices for staple vegetables, which allows the rise to be tracked against average years.

For shoppers, the usual advice applies: vegetables that store well, such as onions and potatoes, and frozen vegetables tend to hold their prices better than leafy greens in such periods.

The editorial asks for attention to the supply of vegetables through the winter. Sunshine this week is the best news farmers could have had.

ECONOMY

From Field to Shelf in Days: Why Vegetable Prices Jump With the Weather and Fall Back as Quickly

By Grace Park | Food & Restaurants

Most of what Japanese households buy changes in price slowly. Vegetables are different, and the reason lies in how they reach the shops.

The bulk of fresh vegetables passes through wholesale markets, where prices are set each morning by the balance of what has arrived and what buyers want. A wet week that halves the supply of cabbages from a growing district can lift the price within days.

Supermarkets smooth the movement but cannot remove it. Within a week or two, the shelf price

follows the market.

Japan relies heavily on a relay of growing districts through the year. Cabbages, for example, come from the warm Pacific coast in winter and spring, and from the cool highlands of Gunma and Nagano in summer. Each district has a short season, so the weather in one place at one time matters.

Vegetables cannot simply be imported to fill the gap. Leafy vegetables do not travel well, and imported supplies, mostly from China, go chiefly to restaurants and processors.

The government has tools to soften the shocks. Under a price stabilisation system, growers of designated vegetables receive compensation when prices fall too low, which encourages them to keep planting. Some produce can be released from storage when prices rise.

The weather's growing extremes have made the swings more frequent. Hot summers have damaged crops in recent years, and rainy spells in late summer and autumn now seem to arrive more often.

The same mechanism works in reverse. When the weather is good and every district harvests at once, prices can fall so low that farmers plough crops back into the soil rather than pay to ship them.

For the consumer price index, fresh vegetables are a small weight but a large source of volatility, which is why economists strip them out.

For the shopper, they are a weekly reminder that food still depends on the sky.

BUSINESS

Raid, Evidence, Order or Prosecution: How a Cartel Case Proceeds After the Investigators Arrive

By Daisuke Ito | Investigations & Longform

The Japan Fair Trade Commission has two ways of pursuing a cartel, and the word used in the reports of the brewers' case tells which one it has chosen.

Most cases are administrative. Investigators enter a company's offices for an on-site inspection, collect documents and interview employees, and the case ends, if the commission finds a violation, with a cease-and-desist order and a surcharge payment order.

A compulsory investigation is the criminal route. It is carried out with warrants from a judge, like a police search, and it is reserved for cases the commission considers serious enough to refer to the Public Prosecutors Office for criminal charges.

The commission's published policy is to seek prosecution in cases of cartels and bid-rigging that have a wide effect on people's lives, and in cases involving repeat offenders or companies that ignore its orders.

Criminal referrals are rare, usually no more than one a year. Recent examples include the bid-rigging over construction of the Chuo maglev line in 2018 and the bid-rigging over test events and contracts for the Tokyo Olympics, referred in 2023.

Under the Antimonopoly Act, individuals convicted of taking part in a cartel can be imprisoned for up to five years, and companies fined up to 500 million yen.

In administrative cases the surcharge for a large company in a cartel is generally ten per cent of its sales of the products concerned, which since a revision of the law in 2019 can be calculated over as many as ten years.

The largest surcharges ever ordered, about 101 billion yen in all, were imposed in 2023 on electric power companies in western Japan that had agreed not to compete for each other's customers.

Kansai Electric Power, which had reported the arrangement first, escaped a surcharge under the leniency programme. Since 2006 companies that confess have been able to reduce or avoid penalties, and a company that comes forward first can receive full immunity.

Cases take time. Between a raid and a conclusion there are usually many months, sometimes more than a year, and no company has been found to have done anything wrong until then.

ELSEWHERE IN TODAY'S PAPER

Takaichi: a tax cut is 'the best method', Page 5.

Koja's 'strong indignation', Page 4.

BUSINESS

BUSINESS

One Rate for Every Can: The Liquor Tax Reform That Took Its Last Step on October 1

By Yuki Saito | Economics & Finance Correspondent

Japanese drinkers have long been able to buy something that looks and tastes like beer for considerably less than beer. A tax reform completed on October 1 has narrowed that gap.

For decades the liquor tax depended on how much malt a drink contained. Beer, made mostly from malt, paid the most. Brewers responded by inventing cheaper categories: happoshu, low-malt beer, in the 1990s, and in the 2000s the so-called new genre, or third beer, made with little or no malt or with added spirits.

Each time the brewers found a cheaper category, the government raised its tax, and each time they found another. The result was a market in which the drinks' recipes were shaped by the tax code.

In 2017 the government decided to end the contest by bringing the three categories to a single rate in three steps, in October 2020, October 2023 and October 2026.

For a 350-millilitre can, the tax on beer has fallen from 77 yen before the reform to 54.25 yen. The tax on the new genre has risen from 28 yen to the same 54.25 yen, and happoshu has moved to the common rate as well.

Chuhai and other low-alcohol drinks pay less, and their tax rose on October 1 as well, from 28 yen to 35 yen per can.

Sake and wine were brought to a single rate in 2023.

The reform's purpose was partly revenue and partly fairness: drinks that compete for the same customers should, the government argued, pay similar taxes.

For the brewers it has meant a shift in strategy. With the tax advantage of the cheaper drinks gone, they have put more effort into beer itself, launching new brands and promoting premium products.

Prices on the shelves reflect not only tax but also the costs of malt, aluminium, energy and transport, which have risen sharply in recent years. Those shipping prices are the subject of the commission's investigation.

BUSINESS

Kirin, Asahi, Sapporo, Suntory: A Century and a Half of Japanese Beer, and the Rivalry That Shaped It

By Naomi Kato | Culture & Society Editor

Japan's beer market has been dominated for decades by four large brewers: Asahi, Kirin, Suntory and Sapporo. The reports available on Thursday morning named the first three among the companies investigated.

Kirin traces its origins to a brewery founded in Yokohama in 1870 by an American, William Copeland, for the foreigners of the treaty port. Its successor, the Japan Brewery Company, launched the Kirin brand in 1888, and Kirin Brewery was established in 1907.

Sapporo began as a brewery of the government's Hokkaido Development Commission in 1876, which is why a star, the commission's emblem, remains the company's symbol.

Asahi grew from a brewery founded in Osaka in 1889. Suntory, best known for whisky, entered the beer business in 1963.

For much of the post-war period Kirin was overwhelmingly the market leader, with its lager holding more than half of the market at its peak in the 1970s.

The upheaval came in 1987, when Asahi launched Super Dry, a crisp, dry beer that became one of the most successful products in Japanese consumer history. Within about a decade Asahi had overtaken Kirin in beer.

The rivalry then moved to price, through the low-malt and new-genre drinks, and to the shelves of convenience stores, which now sell a large share of the country's beer.

Demand has been shrinking. Shipments of beer-type drinks have fallen for most of the period since the mid-1990s, as the population ages and younger people drink less. The companies have looked abroad

for growth, buying brewers in Europe and Australia.

They have also had to contend with shocks at home. In the autumn of last year a ransomware attack disrupted Asahi's ordering and shipping systems in Japan for weeks.

A cartel case, if one is established, would be a different kind of shock: an allegation that rivals who compete fiercely in advertising agreed with one another on the prices that matter most.

BUSINESS

Business Digest

By the Business Desk

BREWERS: The Japan Fair Trade Commission conducts a compulsory investigation of four beer companies, Asahi, Kirin and Suntory among them, on suspicion of fixing shipping prices over several years.

MARKETS: The Nikkei average falls 648 yen to 70,035.71 but holds above 70,000. The TOPIX briefly passes its August 14 high in the morning.

CHIPS: Advantest, Tokyo Electron and Disco are among the shares sold.

WAGES: Real wages rise 1.5 per cent in August, the eighth monthly rise in a row.

VEGETABLES: Autumn vegetables grow dearer after a long spell of rain.

BUDGET: The government considers a second supplementary budget for recovery from earthquake and heavy-rain damage.

TAKIKAWA: The Hokkaido city cancels a 5.9 billion yen redevelopment of its station area and will keep supporting its municipal hospital.

SHOPPING: Nikkei examines agentic commerce, in which AI systems search, compare and pay on a shopper's behalf.

FINANCE: The heads of five financial groups are to discuss artificial intelligence in a session this afternoon, Nikkei reports.

CHINA: Mainland markets reopen today after the National Day holiday.

TECHNOLOGY

The Soai Reaction: How a Molecule in a Flask Makes Copies of Its Own Handedness, Round After Round

A reaction first reported from Tokyo in 1995 turns a barely measurable imbalance into a product of almost perfect purity

By Maya Suzuki | Science & Innovation Desk

Most chemical reactions are indifferent to handedness. Start with ingredients that have no left or right, and the product comes out as an equal mixture of the two mirror forms, a racemate, as surely as a tossed coin falls evenly over many throws.

Kenso Soai's reaction does something that, before 1995, many chemists would have said a simple reaction could not do.

The ingredients

It begins with a pyrimidine aldehyde, a small ring-shaped molecule containing nitrogen, and diisopropylzinc, a reagent that transfers a group of carbon atoms to the aldehyde. The product is an alcohol that exists in left- and right-handed forms.

The decisive point is that the product, bound to zinc, is itself a catalyst for the same reaction, and a handed one. A left-handed molecule of product helps to make more left-handed product. A right-handed molecule makes right-handed product.

The reaction is thus autocatalytic: it accelerates itself, as a fire does, and it copies the handedness of what it has already made.

From a whisper to a shout

In the paper published in the journal Nature in 1995, Mr Soai and his colleagues at Tokyo University of Science showed that a sample with only a small excess of one form, when used to start the reaction, gave a product with a larger excess. Using that product to start the next round increased the excess again.

With improved versions of the reaction, his group later reported starting from an excess of a tiny fraction of one per cent and reaching more than 99.5 per cent purity in three rounds.

The amplification works because the two forms do not simply compete. Molecules of opposite hands pair up in inactive combinations, which removes the minority form from the race, while the majority form carries on multiplying.

The triggers

Because the reaction amplifies so powerfully, it can be used as a detector of the faintest asymmetry.

Mr Soai's group showed that the handedness of the product could be decided by crystals of quartz, which grow in left- and right-handed forms; by circularly polarised light, which has a handedness of its own; by crystals of achiral substances that happen to grow in handed shapes; and even by molecules whose only asymmetry lies in the difference between ordinary hydrogen and its heavier isotope, deuterium, or between two isotopes of carbon.

In 2009 the journal Science published the carbon isotope result, in which a difference of a single neutron in one carbon atom was enough to steer the reaction.

Without any trigger at all, the reaction still produces one hand or the other in large excess, at random from one run to the next. That is what theorists had predicted for a reaction that copies itself and suppresses its rival.

Why it took a prize to explain

The theory had been set out in 1953 by the British physicist Charles Frank, who described in a short paper how a chemical system that made copies of itself and destroyed its mirror image could become entirely one-handed. For four decades it remained an idea on paper.

The Soai reaction was the first real chemical system to behave that way, which is why it has been cited for thirty years in discussions of how life came to be one-handed.

TECHNOLOGY

Mirror Molecules: Why the Body Can Tell Left From Right, and Why It Matters for Every Pharmacy

By Maya Suzuki | Science & Innovation Desk

Hold your hands palm to palm and they match. Lay one on top of the other, both palms down, and they do not. Molecules can have the same property, which chemists call chirality, from the Greek word for hand, a term introduced by the British physicist Lord Kelvin.

A molecule is chiral when it cannot be superimposed on its mirror image, usually because a carbon atom carries four different groups arranged in three dimensions. The two forms are called enantiomers.

In most physical respects enantiomers are identical. They melt and boil at the same temperatures and dissolve equally well. They differ in how they rotate polarised light, and in how they interact with other handed molecules.

That second difference is the one that matters, because life is built of handed molecules. The amino acids that make up proteins are almost all of one form, and the sugars of DNA and RNA of one form.

Receptors in the nose can tell enantiomers apart. One form of the molecule carvone smells of spearmint, its mirror image of caraway.

The tongue can too. The savoury taste of umami, identified by the Japanese chemist Kikunae Ikeda in 1908, comes from one form of glutamate. Its mirror image does not have the taste.

In medicine the stakes are higher. Two enantiomers of a drug can differ in strength, in how the body processes them, and in their side effects.

Thalidomide is the most notorious example. Sold as a sedative from the late 1950s, in Japan as well as in Europe, it caused severe birth defects. One form is associated with the sedative effect and the other with the harm, though the two convert into each other in the body, so that a pure form would not have been safe.

Since 1992 the American Food and Drug Administration has expected drug makers to study each enantiomer of a new chiral drug, and regulators in Japan and Europe take a similar approach. Many modern medicines are sold as a single enantiomer.

Making a single form efficiently is the purpose of asymmetric synthesis, the field honoured in 2001 and again on Wednesday.

ELSEWHERE IN TODAY'S PAPER

Henri Kagan, 95, and the rule of three, Page 6.

Peace Prize tomorrow: 287 nominations, Page 6.

Nikkei gives back 648 yen, holds 70,000, Page 8.

Real wages up for an eighth month, Page 7.

TECHNOLOGY

Kagan's Non-Linear Effect: When an Impure Catalyst Gives a Purer Product Than Itself

By Ethan Cole | Technology & Science Editor

Before 1986 chemists assumed that a handed catalyst worked in a straightforward way. If a catalyst that was entirely one form gave a product 90 per cent pure, a catalyst that was half one form and half the other would give a product half as pure.

Plot the purity of the catalyst against the purity of the product, and the result should be a straight line.

Henri Kagan and his colleagues at Orsay showed that it need not be. In some reactions the line curved upward, so that a catalyst of modest purity gave a product of high purity. In others it curved downward.

The upward curve, a positive non-linear effect, is also called asymmetric amplification.

Mr Kagan explained it with models in which catalyst molecules do not act alone but combine in pairs or larger groups. When two molecules of the same hand combine, the pair may be active. When molecules of opposite hands combine, the pair may be inactive or less active.

If the mixed pairs are more stable, they tie up the minority form, leaving an excess of the majority form free to work. The catalyst that actually does the work is thus purer than the catalyst put into the flask.

One of the most striking examples came from Japan. In the late 1980s Ryoji Noyori's group at Nagoya University reported that an amino alcohol catalyst only 15 per cent pure could give a product 95 per cent pure in the addition of diethylzinc to an aldehyde, a reaction from the same family as Mr Soai's.

The non-linear effect has practical uses. It means that a catalyst need not always be perfectly pure, and it gives chemists a way to diagnose how a catalyst works by measuring how the product's purity varies with the catalyst's.

It also provides the conceptual bridge to Mr Soai's discovery. In the Soai reaction the catalyst is the product, so the amplification that Mr Kagan described happens again in every round.

The academy's citation joins the two men in one sentence: non-linear effects and autocatalysis in asymmetric organic synthesis.

TECHNOLOGY

From Noyori's Menthol to Soai's Self-Copying Molecule: Japan's Long Line in the Chemistry of Handedness

By Maya Suzuki | Science & Innovation Desk

Wednesday's prize is the second Nobel in a quarter-century to honour Japanese work on how molecules choose a hand.

Ryoji Noyori of Nagoya University shared the chemistry prize in 2001 for catalysts that add hydrogen to molecules with a strong preference for one mirror form. His best-known catalysts are built around a handed molecule called BINAP, which his group reported in 1980.

Industry adopted his methods quickly. In 1983 the fragrance company Takasago International began making menthol, the cooling ingredient in toothpaste and chewing gum, by a process based on Noyori's catalysts, producing the natural form selectively.

The family of reactions to which Mr Soai's belongs, the addition of zinc compounds to aldehydes, was studied intensively in Japan in the 1980s. Mr Noyori's group used it to demonstrate one of the most dramatic non-linear effects, and Mr Soai developed catalysts of his own for the same reaction before turning to the question of whether a product could catalyse itself.

He first reported a self-catalysing reaction of this kind in 1990, with modest results. The version that multiplied its own handedness came five years later.

Japan has been unusually successful in the chemistry prize this century. It won three years in a row, from 2000 to 2002, through Hideki Shirakawa for conducting polymers, Mr Noyori, and Koichi Tanaka for a method of weighing large biological molecules.

Osamu Shimomura followed in 2008 for the green fluorescent protein, and Akira Suzuki and Ei-ichi Negishi in 2010 for reactions that join carbon atoms with the help of palladium.

TECHNOLOGY

Akira Yoshino shared the prize in 2019 for the lithium-ion battery, and Susumu Kitagawa of Kyoto University last year for metal-organic frameworks, crystalline materials full of tiny pores that can store and separate gases.

Mr Soai's is the tenth chemistry prize to go to a Japanese scientist, and the second in two years.

Many of the ten did their decisive work decades before Stockholm called. Mr Soai's paper is 31 years old. Mr Kitagawa's frameworks date from the 1990s. The pattern says as much about the research of the 1980s and 1990s as about Japanese science today.

TECHNOLOGY

Why Is Life Left-Handed? Meteorites, Starlight and a Reaction in Tokyo Offer Pieces of an Answer

By Ethan Cole | Technology & Science Editor

Every living thing on Earth uses the same hand. The amino acids in proteins are almost all of the form chemists call L, and the sugars in the backbone of DNA and RNA of the form called D.

A protein made of a random mixture of the two would not fold properly, and a mixed DNA would not form its double helix. Life, it seems, needed to choose. Why it chose as it did, and how, is one of the oldest open questions in biochemistry.

Chemistry without life makes both forms in equal amounts. So the question has two parts: where did the first small imbalance come from, and how was it magnified until one form disappeared?

Clues from space

The first part may have an answer in the sky. The Murchison meteorite, which fell in Australia in 1969, contains amino acids, and some of them show a small excess of the L form, as American researchers reported in 1997.

Japan's Hayabusa2 mission brought back samples of the asteroid Ryugu in 2020, and Japanese teams found more than 20 kinds of amino acids in them, as well as uracil, one of the bases of RNA.

The American OSIRIS-REx mission returned samples of the asteroid Bennu in 2023, which turned out to contain amino acids too. But in those samples the two hands were found in roughly equal amounts, a reminder that the picture is not simple.

Astronomers have proposed a possible source of imbalance in circularly polarised light, which has a handedness and can destroy one form of a molecule faster than the other. Such light has been observed in regions where stars are forming, including the Orion nebula.

The amplifier

The second part of the question is where Kenso Soai's reaction comes in. It demonstrated in a real flask that a tiny imbalance, of the kind such processes might produce, can be magnified to near-total purity by a molecule that copies its own handedness.

And it showed that the trigger could be as slight as polarised light or a crystal of quartz, both of which existed on the early Earth.

No one claims that the Soai reaction itself took place in a primordial pond. Its ingredients are not those of prebiotic chemistry, and it needs conditions that the early Earth would not have provided.

Its importance is as a proof of principle: that chemistry alone, without enzymes or cells, can break the symmetry between left and right decisively. That is a large part of why it is famous.

TECHNOLOGY

Japan's 31 Nobel Laureates

By the Data Desk

PHYSICS (12): Hideki Yukawa 1949; Sin-Itiro Tomonaga 1965; Leo Esaki 1973; Masatoshi Koshiha 2002; Yoichiro Nambu, Makoto Kobayashi and Toshihide Maskawa 2008; Isamu Akasaki, Hiroshi Amano and Shuji Nakamura 2014; Takaaki Kajita 2015; Syukuro Manabe 2021.

CHEMISTRY (10): Kenichi Fukui 1981; Hideki Shirakawa 2000; Ryoji Noyori 2001; Koichi Tanaka 2002; Osamu Shimomura 2008; Akira Suzuki and Ei-ichi Negishi 2010; Akira Yoshino 2019; Susumu Kitagawa 2025; Kenso Soai 2026.

PHYSIOLOGY OR MEDICINE (6): Susumu Tonegawa 1987; Shinya Yamanaka 2012; Satoshi Omura 2015; Yoshinori Ohsumi 2016; Tasuku Honjo 2018; Shimon Sakaguchi 2025.

LITERATURE (2): Yasunari Kawabata 1968; Kenzaburo Oe 1994.

PEACE (1): Eisaku Sato 1974. The organisation Nihon Hidankyo received the Peace Prize in 2024.

THE COUNT: The total of 31 includes three laureates who were American citizens at the time of their awards, Mr Nambu, Mr Nakamura and Mr Manabe, as Japanese reports customarily do.

THIS CENTURY: 23 of the 31 prizes have come since 2000.

MOST IN ONE YEAR: Four, in 2008: three in physics and one in chemistry.

YOUNGEST AT AWARD: Koichi Tanaka, 43, in 2002.

FIRST: Hideki Yukawa, in 1949, for predicting the meson. The award, four years after the war, was a source of national pride.

TECHNOLOGY

Tokyo University of Science: Founded in 1881 by Twenty-One Young Physicists, and Now Home to a Laureate

By Hana Ito | Research & Archive

Tokyo University of Science, Kenso Soai's university, began as an act of faith in physics by a group of young men in the early Meiji years.

In 1881 twenty-one graduates of the physics course of the University of Tokyo founded a school to spread the study of physics and mathematics, teaching in the evenings. It was called the Tokyo Physics Training School, and from 1883 the Tokyo School of Physics.

The school's purpose was to train the teachers and engineers a modernising country needed, and it was famously strict. Many students enrolled; far fewer graduated.

It earned a place in literature. The hero of Natsume Soseki's novel Botchan, published in 1906, is a graduate of the physics school who goes to teach mathematics at a middle school in Shikoku.

It became a university under the post-war education reforms in 1949 and is now one of the largest private science universities in Japan, with campuses at Kagurazaka in central Tokyo, at Katsushika in the east of the capital and at Noda in Chiba Prefecture.

Satoshi Omura, who shared the Nobel Prize in Physiology or Medicine in 2015 for the discovery of a drug against parasitic diseases, studied for his master's degree at the university and later received a doctorate there.

Akira Fujishima, the chemist known for the discovery that titanium dioxide can split water under light, the basis of the photocatalysts now used on self-cleaning surfaces, served as its president.

Mr Soai is a professor emeritus there, and the reaction that bears his name was reported from the university in 1995.

Private universities fund research largely from tuition fees and competitive grants, without the large operating grants that national universities receive from the state. A Nobel prize for work done at one is a notable achievement.

For a school founded to spread physics among the young, a prize for a reaction discovered in its own laboratories is a fitting milestone, 145 years after its founding.

TECHNOLOGY

Invitations, a Committee of Five and a Vote on the Day: How the Chemistry Prize Is Chosen

By Hana Ito | Research & Archive

The Nobel Prize in Chemistry is awarded by the Royal Swedish Academy of Sciences, which also awards the prize in physics and, on behalf of Sweden's central bank, the prize in economic sciences.

The process begins about a year before the announcement, when the Nobel Committee for Chemistry sends invitations to nominate to several thousand people around the world: professors of chemistry, members of academies, previous laureates and others.

Nominations must arrive by January 31. Self-nominations are not accepted.

The committee, of five members chosen by the

academy, then narrows the field, consulting experts in the relevant specialities, and writes a report with its recommendations.

The report goes in the autumn to the academy's class for chemistry and then to the full academy, whose members vote on the day of the announcement. The decision is final, and there is no appeal.

Nominations and the committee's deliberations are kept secret for 50 years. Historians who have studied the opened archives have found that some laureates were nominated many times over many years before they won.

The prize can recognise a discovery long after it was made. The committee looks for work whose importance has been confirmed, which often means decades of further research by others.

Laureates are telephoned shortly before the announcement, if they can be reached. Many recall being woken in the middle of the night; for laureates in Japan, the call comes in the evening.

The prize money, set each year by the Nobel Foundation, is divided between the laureates when more than one shares a prize, in the proportions the academy decides.

The laureates are invited to Stockholm in December, where they give lectures and receive their medals and diplomas from the King of Sweden at a ceremony on December 10.

TECHNOLOGY

What a Catalyst Does: The Matchmaker That Speeds a Reaction and Walks Away Unchanged

By Ethan Cole | Technology & Science Editor

Catalysts are at the centre of this week's chemistry prize and of much of modern industry, yet the word is often used loosely. Its meaning in chemistry is precise.

A catalyst is a substance that speeds up a chemical reaction without being consumed by it. At the end of the reaction it is unchanged and can go on to do the same again.

It works by offering the reacting molecules an easier path. Most reactions need an input of energy to get started, as a car needs a push to get over a hill. A catalyst lowers the hill.

The catalytic converter in a car's exhaust uses platinum and other metals to turn harmful gases into less harmful ones. The Haber-Bosch process uses iron to make ammonia for fertiliser, feeding a large share of the world's population. The enzymes in the body are biological catalysts.

A handed catalyst does more: it guides the reaction so that one mirror form of the product is made in preference to the other. It does so because it is itself handed, and it fits the reacting molecules better in one orientation than in the mirror one.

Ryoji Noyori's catalysts, honoured in 2001, combine a metal such as ruthenium or rhodium with a handed organic molecule wrapped around it. Henri Kagan's DIOP, an early example of such a molecule, was published in 1972.

Some catalysts contain no metal at all. Small organic molecules can act as handed catalysts too, a field that won the Nobel prize in 2021 for Benjamin List and David MacMillan.

In Kenso Soai's reaction, the product is its own catalyst. That is autocatalysis: the reaction speeds itself up as it goes, and because the catalyst is handed, it copies its handedness into each new molecule.

Autocatalysis is common in biology. Life itself can be seen as an enormously complex autocatalytic system, in which molecules direct the making of more of themselves.

That is one reason chemists interested in the origin of life find Mr Soai's simple reaction so suggestive.

TECHNOLOGY

From Laboratory to Factory: Where the Chemistry of Handedness Is Used Every Day

By Maya Suzuki | Science & Innovation Desk

The chemistry honoured on Wednesday is not confined to the laboratory. Making one mirror form of a molecule in preference to the other is a large industrial business.

The first great success was a medicine for Parkinson's disease. In the 1970s William Knowles and his colleagues at the American company Monsanto developed a handed rhodium catalyst to make L-DOPA, the form of the drug that the body can use. The work earned Mr Knowles his share of the prize of 2001.

In Japan, the fragrance and flavour company Takasago International began in 1983 to make menthol by a process based on Ryoji Noyori's catalysts. Natural menthol is a single mirror form, the one that gives the familiar cooling sensation, and the process produces that form selectively.

Mr Noyori's catalysts are also used to make intermediates for carbapenems, a family of powerful antibiotics, and his methods are widely used to make the building blocks of medicines.

Agriculture uses the same chemistry. One of the largest asymmetric processes in the world makes a single form of the herbicide metolachlor, so that farmers apply only the active form and less chemical reaches the soil.

The pharmaceutical industry is the biggest user. A large proportion of modern medicines contain at least one handed centre, and regulators expect companies to justify any decision to sell a mixture of the two forms rather than a single one.

Catalysts are prized because they work in small amounts. A single molecule of catalyst can produce thousands or millions of molecules of product, which makes processes cheaper and reduces waste.

Biology offers another route. Enzymes, nature's handed catalysts, are now engineered to perform industrial reactions, and fermentation produces many amino acids in their natural form. Japanese companies such as Ajinomoto have long been leaders in that field.

Mr Soai's reaction is not itself an industrial process. Its value lies in what it shows: that handedness can be amplified from almost nothing, a principle that chemists continue to study for new ways of making pure compounds.

The line from a curious observation in a university laboratory to a factory making tonnes of product can be short, as with menthol, or it can take generations. Nobody knows in advance which it will be.

TECHNOLOGY

Japan's Research Standing in Numbers: Fourth in Influential Papers Around 2000, Thirteenth Now

By Kenta Sakamoto | Data & Visualization

Japan has won two chemistry prizes and a medicine prize in two years. The statistics on the health of its research tell a less cheerful story.

The National Institute of Science and Technology Policy, a government research body, publishes an annual report on the country's science indicators. Its most watched figure is the number of papers each country produces among the ten per cent most cited in the world, a rough measure of influential research.

Around the turn of the century Japan ranked fourth by that measure. In recent editions it has ranked thirteenth.

China now ranks first, having overtaken the United States, and several countries smaller than Japan rank above it.

Japan's total number of papers has held up better than its share of the most cited. The country still produces a large volume of research. What it produces less of, relatively, is work that others build upon.

Funding explains part of the gap. The operating grants that the state gives the national universities, which pay for permanent staff and basic research, fell from about 1.24 trillion yen in 2004, when the universities became independent corporations, to about 1.08 trillion yen in recent years.

Competitive funding grew instead, and with it the number of researchers on fixed-term contracts. Surveys of researchers have repeatedly found that the time available for research has shrunk as administrative duties have grown.

The pipeline of new scientists has narrowed. Enrolments in doctoral programmes peaked in the early 2000s and have fallen since, and Japan has fewer doctorate holders relative to its population than other major industrial countries.

TECHNOLOGY

Women make up less than a fifth of Japan's researchers, the lowest share among the Group of Seven countries.

The government has responded with a ten trillion yen fund for universities aiming at international excellence, more support for doctoral students and programmes for regional research universities. Its effects will take years to appear in the statistics, just as the effects of the earlier cuts did.

Nobel prizes, which typically honour work done decades earlier, are a lagging indicator. The papers of today are the leading one.

TECHNOLOGY

The Ten Trillion Yen University Fund: How the State Hopes to Build Universities of the First Rank

By Hana Ito | Research & Archive

Japan's largest recent attempt to restore the strength of its universities is a fund of about ten trillion yen, managed by the Japan Science and Technology Agency.

The fund invests its capital in financial markets and uses the returns to support a small number of universities certified as universities of international research excellence. The support is meant to last for up to 25 years.

The model is the endowment of the great American universities, which pay for research and scholarships from the income of large invested funds. Japan's universities have no endowments on that scale, and the state decided to create one for them.

Tohoku University, in Sendai, was certified as the first such university in 2024, after a selection in which the University of Tokyo and Kyoto University, among others, applied without success in the first round.

Certified universities must commit to reforms: stronger management, more freedom for young researchers, more international staff and students, and growth in their own income from other sources.

Supporters say the fund gives a few universities the resources to compete with the best in the world, which the old system of thinly spread grants could not.

Critics argue that concentrating money on a handful of institutions does nothing for the many universities where good research is also done, and that the fund's income depends on the markets.

The government has also introduced a separate programme to strengthen research at regional and specialised universities, an acknowledgment that excellence is not confined to the largest names.

This week's prize illustrates the point. Kenso Soai did his work at Tokyo University of Science, a private university that is not among those the fund supports.

The success of the fund will be judged over decades, in the same way as the research it supports.

TECHNOLOGY

Agentic Commerce: Shopping in Which AI Searches, Compares and Pays, and the Questions It Raises

By Ethan Cole | Technology & Science Editor

Nikkei is devoting attention from noon today to agentic commerce, shopping in which an artificial intelligence system searches for products, compares them and pays on the customer's behalf.

The idea goes beyond the recommendation engines of online shops. An AI agent is meant to carry out a task, not merely suggest: told to buy a pair of running shoes under 15,000 yen in a certain size, it would search several shops, compare prices and reviews, choose and complete the purchase.

The largest payment companies have been preparing for it. In April last year Visa and Mastercard each announced programmes to let AI agents make payments with cards, using digital tokens that can be limited to particular merchants, amounts or periods.

In September last year OpenAI introduced a checkout function in ChatGPT, allowing American users to buy from some online sellers without leaving the conversation, using a protocol developed with the payments company Stripe. Google announced a protocol of its own for payments by agents in the same month.

The questions

The technology raises questions that existing rules did not anticipate.

The first is authority. A shop needs to know that an agent is acting for a real customer and within limits the customer set. The payment companies' tokens are one answer, but standards are still being agreed.

The second is responsibility. If an agent buys the wrong item, or is tricked by a fraudulent site, who bears the loss: the customer, the company that made the agent, the shop or the card issuer?

Japan's law on electronic consumer contracts, passed in 2001, protects consumers who make an input error when the seller did not give them a chance to confirm the order. It was written for people pressing buttons, not for software acting on their behalf.

The third is security. Since April last year, Japanese online shops have been required under guidelines for card security to use an extra authentication step, EMV 3-D Secure, for card payments. Systems in which no person is present at the moment of payment have to be fitted into that framework.

The fourth is competition. If customers delegate their shopping to a few AI systems, the companies that run them gain great power over which shops and brands are seen at all.

For now agentic commerce is at an early stage. Its promoters see the largest change in online shopping since the smartphone. Its sceptics point out that most people still like to choose for themselves.

TECHNOLOGY

The Sankei Urges Companies to Guard Against the Misuse of AI as Leaks of Personal Data Reach a Record

By the Technology Desk

The Sankei Shimbun called in an editorial on Thursday for measures against the misuse of artificial intelligence, to prevent leaks of data from companies.

The editorial follows the report, carried on the Yomiuri's front page on Wednesday, that leaks of personal information in Japan have reached a record 506 cases so far this year, according to a count by a security company.

That count lists, among the methods behind this year's cases, attackers using AI to search systems for vulnerabilities.

Several large cases have been reported this week. Yakiniku King, the restaurant chain, has had about 10.78 million records taken through its smartphone app, Nikkei reported. Up to about 6.6 million records may have been exposed at Times Car, the car-sharing service, and about 220,000 at Daiwa Securities.

The threat runs in two directions. Attackers use AI to find weaknesses and to write convincing fraudulent messages, and employees can leak information by feeding confidential material into AI services that are not under their company's control.

Security specialists generally recommend that companies keep an inventory of the AI tools their staff use, set rules for what information may be entered into them, and apply security fixes faster, because AI shortens the time between the discovery of a flaw and its exploitation.

Defenders can use the same tools. AI systems that read code and logs can find vulnerabilities and signs of intrusion faster than people alone.

The government's new powers of active cyber defence, which took effect on October 1, are aimed at serious attacks on infrastructure and the state, not at the routine theft of customer data.

Companies that suffer certain leaks must report them to the Personal Information Protection Commission and notify the people affected.

The editorial adds the voice of a national newspaper to the calls for companies to treat the security of personal data as a responsibility of management, not of the IT department alone.

ELSEWHERE IN TODAY'S PAPER

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Kaju retains her world title, Page 14.

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TECHNOLOGY

Himawari's Ten-Minute Eye: The Satellite Watching Koguma, Twelve Years After Its Predecessor Was Launched

By Maya Suzuki | Science & Innovation Desk

The typhoons on Thursday's map are being watched, every ten minutes, from 35,800 kilometres above the equator.

Himawari-9, the Japan Meteorological Agency's geostationary weather satellite, hovers over a fixed point south of Japan at about 140 degrees east, the same speed as the Earth's rotation keeping it in place.

It photographs the whole disc of the Earth visible from that position every ten minutes, and the area around Japan every two and a half minutes. When a typhoon threatens, a smaller area around it can be imaged every two and a half minutes as well.

Its imager sees in 16 wavelengths of visible and infrared light, which allows forecasters to estimate the height of clouds, the temperature of their tops, water vapour in the air and even volcanic ash and dust.

The design was introduced with Himawari-8, launched on an H-IIA rocket from Tanegashima on October 7, 2014, twelve years ago yesterday. It began operations in July 2015, and Himawari-9, its twin, took over in December 2022.

The improvement over the previous generation was large: three times as many wavelengths, and images several times as frequent and sharper.

For typhoons the data matter at every stage. Forecasters estimate a storm's intensity from the pattern of its clouds in satellite images, a method devised in the United States in the 1970s, because few aircraft fly into typhoons in the western Pacific.

The images are shared freely with weather services across Asia and the Pacific, and they have become a standard tool for assessing disasters, from floods to wildfires.

The first Himawari was launched in 1977. Himawari-10, now being built, is due to enter service around the end of this decade, carrying for the first time an infrared sounder that will measure the temperature and moisture of the atmosphere layer by layer.

The name means sunflower, the flower that turns to follow the sun.

TECHNOLOGY

October 8, 1958: In Stockholm, a Surgeon Implants the First Pacemaker Placed Wholly Inside a Patient

By Hana Ito | Research & Archive

On October 8, 1958, sixty-eight years ago today, the surgeon Åke Senning implanted a pacemaker inside the body of a patient at the Karolinska Hospital in Stockholm, the city where the Nobel prizes are announced this week.

The device had been built by Rune Elmqvist, an engineer and physician at the Swedish medical equipment company Elema-Schönander. It was a small disc containing two transistors and a rechargeable battery, encased in epoxy resin.

The patient, Arne Larsson, was 43. A viral infection had damaged his heart's electrical system, and he was suffering many fainting attacks a day. His wife, Else-Marie, had pressed the doctors to try the experimental device.

Earlier pacemakers had been external machines, some the size of a television set, connected to the heart through wires in the skin. They tied patients to a power socket and risked infection.

The first implanted unit stopped working within hours and was replaced with a second. The early devices were short-lived, and Larsson needed many more.

He received more than 20 pacemakers over the rest of his life, as the technology improved. He lived until 2001, dying at 86, having outlived both the surgeon and the engineer who gave him his first.

In the decades that followed, pacemakers became smaller, longer-lasting and smarter, sensing the heart's own rhythm and stimulating it only when needed. Lithium batteries, introduced in the 1970s, extended their lives to many years.

The most recent designs are leadless: capsules the size of a large vitamin pill placed directly inside the heart through a vein, without surgery to open the chest.

Pacemakers are now implanted in hundreds of thousands of people around the world every year.

Larsson's operation was carried out with little publicity. It stands now as one of the founding moments of implanted medical electronics.

TECHNOLOGY

October 8, 1945: An Engineer at a Radar Company Files the First Patent for Cooking With Microwaves

By Hana Ito | Research & Archive

On October 8, 1945, the American engineer Percy Spencer of the Raytheon Company filed a patent application for a method of treating foodstuffs with microwaves. It was the beginning of the microwave oven.

Spencer was an expert on the magnetron, the vacuum tube that generates microwaves and that had made wartime radar possible. Raytheon had built huge numbers of them for the Allies.

According to the story told ever since, he noticed that a chocolate bar in his pocket had melted while he was working near a magnetron. He tried popcorn kernels next, and they popped.

The patent was granted in 1950. Raytheon's first commercial oven, the Radarange, went on sale in 1947. It stood almost as tall as a man, weighed more than 300 kilograms and needed water cooling, and it was sold to restaurants, ships and railways, not to households.

A countertop model for homes followed in the United States in 1967.

Japan played a large part in making the oven an ordinary appliance. Sharp began mass production of Japan's first microwave oven in 1962, and in 1966 it introduced the turntable, which rotates the food so that it heats more evenly.

The early ovens announced that the food was ready with a bell. The sound gave Japanese a verb, chin suru, which is still used for heating something in the microwave, though most ovens now beep.

The oven works by making water molecules in food rotate back and forth in a rapidly alternating electric field. The motion becomes heat. Microwaves penetrate only a few centimetres, which is why large portions heat unevenly.

Nearly every Japanese household now owns one, and many models combine microwaves with conventional heating and steam.

The oven is one of the great examples of a technology of war turned to peaceful use: radar, invented to find bombers, ended up in the kitchen.

TECHNOLOGY

This Week in Technology History

By the Technology Desk

OCTOBER 1, 1982: Sony's CDP-101, the first compact disc player, goes on sale in Japan.

OCTOBER 4, 1957: The Soviet Union launches Sputnik 1, the first artificial satellite.

OCTOBER 5, 1991: Linus Torvalds announces an early version of the Linux kernel, weeks after making the first release available.

OCTOBER 6, 1927: The Jazz Singer, the first feature-length film with synchronised speech and singing, opens in New York.

OCTOBER 7, 1959: The Soviet probe Luna 3 photographs the far side of the Moon.

OCTOBER 7, 2014: Himawari-8, the weather satellite that set the pattern for today's, is launched from Tanegashima.

OCTOBER 8, 1945: Percy Spencer of Raytheon files the first patent for a microwave oven.

OCTOBER 8, 1958: Åke Senning implants Rune Elmqvist's pacemaker in Arne Larsson in Stockholm, the first placed wholly inside a patient.

1995: Kenso Soai's group reports in Nature a reaction that multiplies its own handedness, the work honoured with the Nobel Prize in Chemistry yesterday.

1986: Henri Kagan's group describes the non-linear effect in asymmetric catalysis.

TECHNOLOGY

TECHNOLOGY

Technology Digest

By the Technology Desk

NOBEL: Kenso Soai of Tokyo University of Science and Henri Kagan of France share the chemistry prize for non-linear effects and autocatalysis in asymmetric synthesis.

PHYSICS: Tuesday's prize to Francis Halzen honours the IceCube observatory, in which Chiba University takes part.

MEDICINE: Monday's prize honours optogenetics, the control of nerve cells with light.

SHOPPING: Nikkei examines agentic commerce, in which AI systems search, compare and pay.

FINANCE: The heads of five financial groups are to discuss artificial intelligence this afternoon, Nikkei reports.

SECURITY: The Sankei calls for measures against AI misuse to prevent data leaks.

LEAKS: The count of personal data leaks this year stands at a record 506.

WEATHER: Himawari-9 watches Typhoons No. 28 and No. 29 from 35,800 km above the equator.

HISTORY: The first fully implanted pacemaker was fitted 68 years ago today in Stockholm.

LITERATURE: The Swedish Academy announces its prize at about 8 p.m.

SOCIETY

Detention, Indictment, Trial: What Happens Next in the Naha Killing Under Japanese Criminal Procedure

By Emi Kondo | Society & Local News

The Marine arrested on Sunday in the killing of a woman in Naha is held under the same criminal procedure as any suspect in Japan, and its timetable will shape the coming weeks.

After an arrest, the police may hold a suspect for up to 48 hours before sending the case to prosecutors, who then have 24 hours to ask a judge for detention.

A judge can order detention for up to ten days, and extend it by up to ten more. Within that period, at most 23 days from the arrest, prosecutors must decide whether to indict the suspect or release him. If he is arrested again on a separate charge, the clock starts anew.

Questioning takes place during detention, without a lawyer present, a feature of the Japanese system that has long been criticised by defence lawyers and human rights groups. Recording of interrogations is required for cases tried before lay judges, which include this one.

The suspect, a lance corporal aged 20 from Futenma air station, is held on suspicion of robbery and murder. He denies the allegation.

Robbery resulting in death is among the gravest offences in the Penal Code. Its penalty is death or life imprisonment.

Serious cases of this kind are tried in district courts by a panel of three professional judges and six citizens chosen at random, the lay judge system introduced in 2009. Trials usually begin many months after indictment.

Under the Status of Forces Agreement, Japan has the primary right to try members of the American forces for offences committed off duty. When a suspect is in American hands, the agreement allows the United States to keep custody until indictment, though in cases of murder and rape it has agreed to consider handing suspects over earlier.

That rule has been at the centre of Okinawan demands for a review of the agreement, which Governor Genta Koja put to the senior American officer on the island on Monday.

The woman, who was 39, was found strangled in a hotel room in the city's Wakasa district early on Saturday. A suspect who is arrested is presumed innocent until proved guilty.

ELSEWHERE IN TODAY'S PAPER

Kaju retains her world title, Page 14.

Literature prize tonight, Page 16.

Editorial: The long watch, Page 19.

Weather: the map and the forecast, Page 13.

Crossword, Page 15.

SOCIETY

Takikawa Drops a 5.9 Billion Yen Plan to Rebuild Its Station Area and Puts Its Money Behind the City Hospital

By Kenji Fukuda | Real Estate & Urban Development

Takikawa, a city in central Hokkaido, has cancelled a plan to redevelop the area around its railway station at a cost of 5.9 billion yen, and will continue to support its municipal hospital instead, the morning papers report.

The choice between a project to revive a town centre and the money to keep a hospital running is one that many small cities in Japan now face. Takikawa has made it in public.

The city, which had fewer than 40,000 people at the last census, lies on the Ishikari plain where the Sorachi River joins the Ishikari. It is known for its fields of rapeseed flowers in spring and as the home of a well-known chain of restaurants serving grilled mutton.

Its station is a junction. The Nemuro Main Line branches off the Hakodate Main Line there, though the line no longer runs through to eastern Hokkaido: the section between Furano and Shintoku was closed in 2024.

Station-area redevelopment has been a standard remedy for declining town centres: new buildings with shops, housing and public facilities, often financed with national subsidies, intended to bring people back to the middle of town.

Such projects have become harder to justify as costs of construction have risen and populations have fallen. Several cities have scaled back or abandoned them in recent years.

Municipal hospitals, meanwhile, have come under heavy financial pressure. Many have run deficits as wages, energy and equipment costs have risen faster than the fees paid under the national health insurance system, and cities have had to transfer money from their general budgets to keep them open.

For a city in rural Hokkaido, the hospital is often the only place for emergency care and many specialties for a wide area. Losing it would push patients to make long journeys, especially in winter.

The reports did not give the details of the support the city will provide or the hospital's finances.

The decision is likely to be watched by other cities weighing similar choices between the visible ambition of a new building and the less visible necessity of a hospital that works.

SOCIETY

The Bonin Islands: Settled From Hawaii, Claimed by Japan, Run by America and Returned in 1968

By Hana Ito | Research & Archive

The islands that Typhoon No. 29 is forecast to approach next week have one of the most unusual histories in Japan.

The Ogasawara Islands lie about a thousand kilometres south of Tokyo. Their English name, the Bonin Islands, is thought to come from the old Japanese word for uninhabited, which they were when Japanese navigators found them.

The first permanent settlers arrived in 1830 from Hawaii: a small group of Americans and Europeans, among them a man from Massachusetts named Nathaniel Savory, together with Pacific Islanders. Whaling ships called for water and supplies.

Japan asserted its sovereignty in 1876, and Japanese settlers followed. The descendants of the first settlers became Japanese subjects.

During the Second World War the civilian population was evacuated to the mainland. Iwo To, known abroad as Iwo Jima, part of the same administrative group, was the scene of one of the war's bloodiest battles in 1945.

After the war the islands were placed under American administration, and only the descendants of the Western settlers were allowed to return. The rest of the former residents waited more than two decades.

The islands were returned to Japan on June 26, 1968, four years before Okinawa. They now form the village of Ogasawara, part of the Tokyo metropolitan government, with about 2,500 residents on Chichijima and Hahajima.

Their isolation, never connected to a continent, produced plants, snails, birds and insects found nowhere else, which earned the islands their nickname as the Galapagos of the Orient and a place on UNESCO's World Heritage list in 2011.

There is no airport. Proposals to build one have been debated for decades, set against the cost, the terrain and the effect on the islands' environment. The ship from Tokyo remains the only scheduled link.

Typhoons are part of island life. Residents secure boats and houses, and the shipping company adjusts its sailings, as it may do again before Koguma arrives.

SOCIETY

Municipal Hospitals: Why the Hospitals Japan's Towns Run Themselves Are Losing Money

By Hana Ito | Research & Archive

Japan has about 8,000 hospitals. Most are private, many of them run by doctors' medical corporations. Roughly one in ten is public, run by prefectures, cities, towns or groups of municipalities.

Public hospitals are concentrated where private ones are scarce: in rural areas and small cities, and in services that do not pay, such as emergency care, children's care, childbirth and care in remote areas.

That is the heart of their difficulty. Hospital income in Japan comes overwhelmingly from fees set nationally under the health insurance system, revised every two years. A hospital cannot raise its prices when its costs rise.

Costs have risen sharply. Wages for nurses and other staff, electricity and gas, food for patients and medical equipment have all become more expensive since 2022.

During the pandemic, subsidies for beds reserved for patients with the coronavirus kept many hospitals afloat. When they ended, deficits returned and widened, and hospital associations have reported most public hospitals running at a loss.

Municipalities fill the gap from their general budgets, transferring money for services that the hospital is obliged to provide, such as emergency care. For small cities, those transfers can become a heavy burden.

The internal affairs ministry has asked local authorities to draw up plans to strengthen the management of their hospitals, encouraging them to share functions with neighbouring hospitals, convert some beds to other uses and secure doctors.

The shortage of doctors is a separate problem. Rules limiting doctors' overtime took effect in April 2024, making it harder for rural hospitals that depended on doctors sent from university hospitals to staff night duties.

Closures and mergers have followed in some places. For residents, the consequence can be a long drive to the nearest emergency department.

Takikawa's choice to support its hospital rather than build a new station area is one answer to that pressure. It will not be the last city to face the question.

SOCIETY

Sunshine From Hokkaido to Kyushu After a Chilly Start: 6 Degrees in Kushiro, 30 in Naha

By the Weather Desk

Thursday is a day of sunshine across Japan, according to the forecast map supplied for this edition, which gives the sky, the forecast highs and this morning's lows for 19 cities.

All 19 begin with sun. Sapporo has some cloud at times, and Kochi and Naha turn cloudy in the evening. Every other city on the map is sunny all day.

The morning was chilly in the north and in the mountains. Kushiro, on the Pacific coast of eastern Hokkaido, fell to 6 degrees, and Nagano to 8.

Sapporo, Aomori and Akita started at 11 degrees, and Sendai and Niigata at 12.

By afternoon the country warms considerably. Tokyo is forecast to reach 25 degrees after a low of 15, and Nagoya, Kyoto, Osaka, Hiroshima, Kochi and Fukuoka 27.

Kagoshima reaches 29 and Naha 30, the warmest on the map, after a morning low of 24.

The range between morning and afternoon is wide. Kushiro rises 15 degrees, from 6 to 21, the widest on

the map, and Kochi, Kyoto and Nagano 14.

Days like this, cold in the morning and warm in the afternoon, are typical of the season when dry air arrives and skies are clear at night. Layers are the practical answer.

The two typhoons are far out over the Pacific to the south-east. Typhoon No. 28 is forecast to pass well east of the Ogasawara Islands on Saturday, and No. 29 to become a very strong typhoon.

The clear skies are good news for anyone hoping to see the Draconid meteors, which are active this evening and tomorrow evening, with little moonlight to spoil the view.

In Tohoku, Aomori is forecast to reach 23, Akita 22 and Sendai 24, all in sunshine, and Niigata and Kanazawa on the Sea of Japan coast 23 and 24.

The days are shortening quickly. The sun sets at 5:17 p.m. in Tokyo and at 5:06 p.m. in Sapporo, and drivers face low evening sun on westward roads.

The full forecast for every city, with sunrise and sunset times, is on the weather page.

SOCIETY

The Naha Case: Key Facts

By the Society Desk

VICTIM: a woman of 39, found strangled in a hotel room in Wakasa, Naha, early on Saturday, October 3.

SUSPECT: a lance corporal, 20, from Futenma air station. He denies the allegation.

ARREST: Sunday, October 4, on suspicion of robbery and murder.

INVESTIGATION: police believe she may have been attacked within an hour of the suspect entering the room.

STAND-DOWN: the American forces in Okinawa suspend operations from Wednesday to Friday.

CURFEW: from midnight to 5 a.m., for 30 days from Friday.

GOVERNOR: Genta Koja tells the prime minister of his strong indignation.

PRIME MINISTER: prevention to be discussed between Japan and the United States.

NEXT: prosecutors must decide on an indictment within 23 days of the arrest.

PENALTY: robbery resulting in death carries death or life imprisonment.

SOCIETY

The Red Feather Campaign Is Under Way: Seventy-Nine Years of Community Chest Collections

By Emi Kondo | Society & Local News

Volunteers with collection boxes have been at station entrances across Japan since the start of the month, and the small red feathers they give donors have begun to appear on lapels.

The Red Feather Community Chest campaign, the national fund-raising drive for local welfare, began on October 1 and runs until the end of March.

It dates from 1947, when community chests were set up to support welfare work in a country devastated by war. The red feather, worn to show that the wearer has given, became its symbol.

The money is spent mainly in the prefecture where it is raised, on local welfare: support for elderly people living alone, children's cafeterias and disability groups.

Donations come from households, through neighbourhood associations, and from companies, schools and street collections.

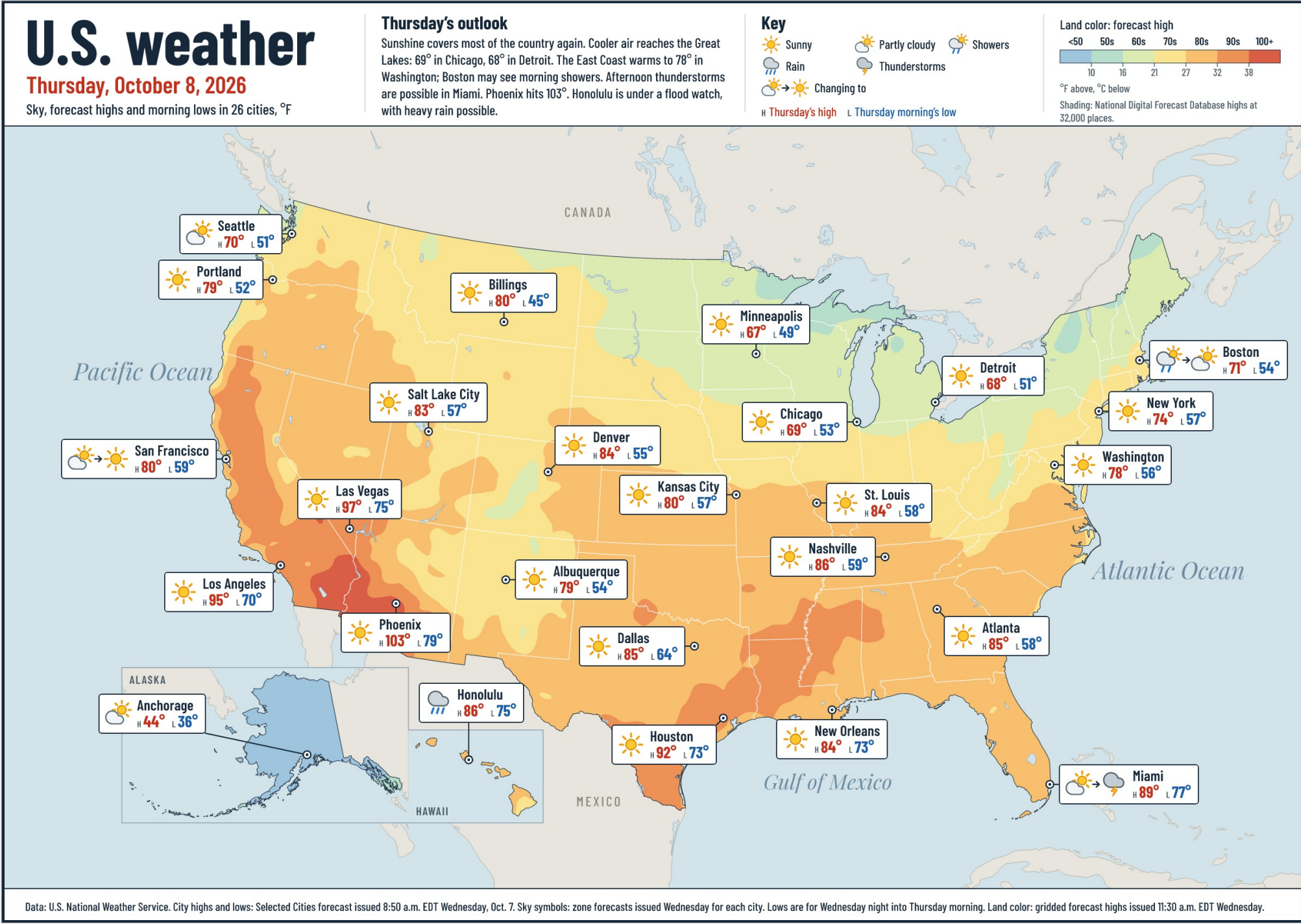
The total collected peaked in the mid-1990s and has fallen since, as neighbourhood associations have weakened and the population has aged.

The campaign now accepts donations online and by cashless payment.

A separate year-end appeal, held in December, collects for help with the costs of the New Year season for people in need.

In years of large disasters, the community chest has also collected relief money for victims, distributed through the prefectures affected.

The feathers will be seen through the autumn. The work they pay for is mostly invisible, done by volunteers.



SOCIETY

Weather Abroad: Sunshine Across Most of the United States, Cooler by the Great Lakes, 103 in Phoenix and a Flood Watch in Honolulu

By the Weather Desk

Most of the United States has another sunny day on Thursday, according to the map supplied for this edition, which gives the sky, forecast highs and morning lows in degrees Fahrenheit for 26 cities.

Cooler air reaches the Great Lakes. Chicago is forecast to reach 69 degrees, about 21 Celsius, after a low of 53, and Detroit 68 after 51. Minneapolis is the coolest city in the lower 48 states on the map, at 67.

The East Coast warms. Washington reaches 78 and New York 74, both in sunshine. Boston may see showers in the morning before turning partly cloudy, with a high of 71.

In the South, Atlanta reaches 85 and Nashville 86. Houston is forecast at 92 and New Orleans at 84,

both sunny, with morning lows of 73.

Miami turns from partly cloudy to thunderstorms in the afternoon, with a high of 89 and a low of 77.

The Southwest stays hot. Phoenix is forecast to reach 103 degrees, about 39 Celsius, the highest on the map, after a low of 79, the warmest morning. Las Vegas reaches 97 and Los Angeles 95.

San Francisco clears from partly cloudy to sunny and reaches 80. Portland, Oregon, is sunny at 79, and Seattle partly cloudy at 70.

Inland in the West, Salt Lake City reaches 83 and Denver 84 under sunny skies, and Billings 80 after the coldest morning in the lower 48 on the map, 45.

Kansas City is forecast at 80, St. Louis at 84, Dallas at 85 and Albuquerque at 79.

Anchorage is partly cloudy and cool, with a high of 44 and a low of 36. Honolulu is under a flood watch, with rain and heavy downpours possible and a high of 86.

The data are from the National Weather Service's forecast for selected cities issued at 8:50 a.m. Eastern time on Wednesday. The lows are for Wednesday night into Thursday morning.

SPORTS

Two Days to the Climax Series: Giants Host DeNA, Seibu Host Nippon-Ham, and the Champions Wait

By Oliver Brooks | Sports Desk Editor

Professional baseball's post-season begins on Saturday, October 10, with the first stages of the Climax Series in both leagues.

In the Central League, the Yomiuri Giants, who finished second, play the Yokohama DeNA BayStars, third, at Tokyo Dome.

In the Pacific League, the Saitama Seibu Lions, second, play the Hokkaido Nippon-Ham Fighters, third, at Seibu's domed stadium in Tokorozawa.

Each first stage is the best of three games, all at the home of the higher-placed team, which goes through if the series is drawn. Games are played on consecutive days, so any third game falls on Monday, the Sports Day holiday.

The winners advance to the final stages. The Central League's begins at Koshien on Wednesday, October 14.

In the Central League final stage, the winner faces Hanshin, the champions. The final stage is played over up to six games, and the first team to four wins goes through. Hanshin begin with one win already credited to them, so they need three more; the challenger needs four.

In the Pacific League, the winner travels to Fukuoka to face SoftBank, who won the league with 91 wins. Under a rule introduced this season, SoftBank begin with two wins in hand, because both possible opponents finished more than ten games behind them.

The rule was a response to complaints that a team finishing far behind the champion, or with a losing record, could reach the Japan Series through a short play-off. Its supporters say it rewards the long season; its critics say it makes the play-offs less of a contest.

The final-stage winners meet in the Japan Series, which begins later in the month.

Both first stages are indoors, so the weather, and Typhoon No. 29, cannot interfere with the games.

Weekend games are played in the daytime.

The two clubs met in the Climax Series two years ago, in the final stage, when DeNA, third in the league that season, beat the Giants and went on to win the Japan Series. The Giants will be wary.

SPORTS

Haruka Kaju Retains Her World Title at 63 kg in Baku; Yuhei Oino Is Beaten at 81 kg

The 26-year-old, champion in Budapest last year, wins again on the fourth day of the world championships

By Oliver Brooks | Sports Desk Editor

Haruka Kaju won the women's 63 kg title at the world judo championships in Baku on Wednesday, her second world title in succession, Sankei News reports.

In the men's 81 kg, contested on the same day, Yuhei Oino was beaten and did not take the title.

Kaju, who is 26, won her first world title at the championships in Budapest last year. She came to Baku ranked among the best in the world in her weight, having won Grand Slam tournaments in Tbilisi and Ulaanbaatar this year.

Retaining a world title is hard in any sport and

particularly so in judo, where every contest can be ended in a moment by a single throw and where the champion's style is studied by every rival for a year.

The 63 kg category, half-middleweight, has been one of the most competitive in women's judo, with strong fighters from France, Slovenia and the Netherlands among others.

Her record over the past two years makes her one of Japan's leading contenders for the Olympic title in Los Angeles in 2028, though the selection for those Games is a long way off.

The 81 kg category is among the deepest in the men's draw, and the margin between winning and losing in it is small. The reports available at press time did not say at which stage Oino lost.

Japan's team had made a strong start to the championships, with three gold medals and two bronze after the first two days.

The championships, at the National Gymnastics Arena in the Azerbaijani capital, continue today with the women's 70 kg and the men's 90 kg, and end on Sunday with the mixed team event, in which Japan's men and women compete together.

Baku is five hours behind Japan. The finals are held in the evening, local time, which means late at night in Japan.

Detailed results of Kaju's contests were not available at the time these pages went to press.

ELSEWHERE IN TODAY'S PAPER

Peace Prize tomorrow: 287 nominations, Page 6.

Nikkei gives back 648 yen, holds 70,000, Page 8.

Real wages up for an eighth month, Page 7.

How the Soai reaction works, Page 9.

Literature prize tonight, Page 16.

SPORTS

Ippon, Waza-ari and the Return of the Yuko: How a Judo Contest Is Won

By Haruto Yamamoto | Sports Reporter

A judo contest at the world championships lasts four minutes for men and women alike, and it can end in a second.

The decisive score is ippon, awarded for a throw that lands an opponent largely on the back with force, speed and control, for a hold-down kept for 20 seconds, or when an opponent submits to a strangle or an arm lock. Ippon ends the contest at once.

A slightly less complete throw, or a hold-down of ten seconds or more, scores waza-ari. Under the present rules, two waza-ari add up to ippon and end the contest.

The rules adopted for the current Olympic cycle brought back the yuko, a smaller score for a throw that falls short of waza-ari or a shorter hold-down, which had been abolished in 2017.

Penalties, called shido, are given for passivity, for false attacks and for illegal grips. A third shido means defeat.

If the scores are level at the end of four minutes, the contest goes to golden score, with no time limit: the first score or penalty decides it.

The world championships have been held every year since 2017, Olympic years included, except in 2020, when the pandemic intervened. Each sex has seven weight categories, contested over seven days, with the mixed team event on the last.

Each country may enter up to two judoka in each category, which allows strong nations like Japan to send more than one contender.

Japan, where the sport was founded by Jigoro Kano in 1882, has won more world titles than any other nation.

France, Georgia, Azerbaijan, South Korea and Brazil are among the other leading nations. The hosts, Azerbaijan, have become a formidable judo country in their own right.

SPORTS

Abe and Miura: A Catcher and a Pitcher, Each a One-Club Man, Meet Again in the First Stage

By Oliver Brooks | Sports Desk Editor

The Central League's first stage at Tokyo Dome on Saturday matches two managers whose careers have been spent almost entirely with the clubs they now lead.

Shinnosuke Abe, the Giants' manager, was one of the finest catchers of his generation, a powerful hitter who spent his whole playing career with Yomiuri and captained the club. He became manager in 2024 and won the league in his first season.

Daisuke Miura, DeNA's manager, pitched for the Yokohama club for a quarter of a century, from 1992 to 2016, through many losing seasons, and became one of its most loved figures, known to supporters by the nickname Hamano Bancho.

He took over as manager in 2021, and in 2024 led the team from third place through both stages of the Climax Series and to the Japan Series title, the club's first in 26 years.

That run included a final-stage victory over Abe's Giants, which the Giants and their supporters have not forgotten.

The two men's backgrounds shape their teams in different ways. Catchers who become managers are often credited with an understanding of pitching and of the opposing hitters; pitchers who become managers with a feel for the strain on a pitching staff in a short series.

In a best-of-three series, the choice of starting pitchers for the first two games, and the readiness to change them early, can decide everything.

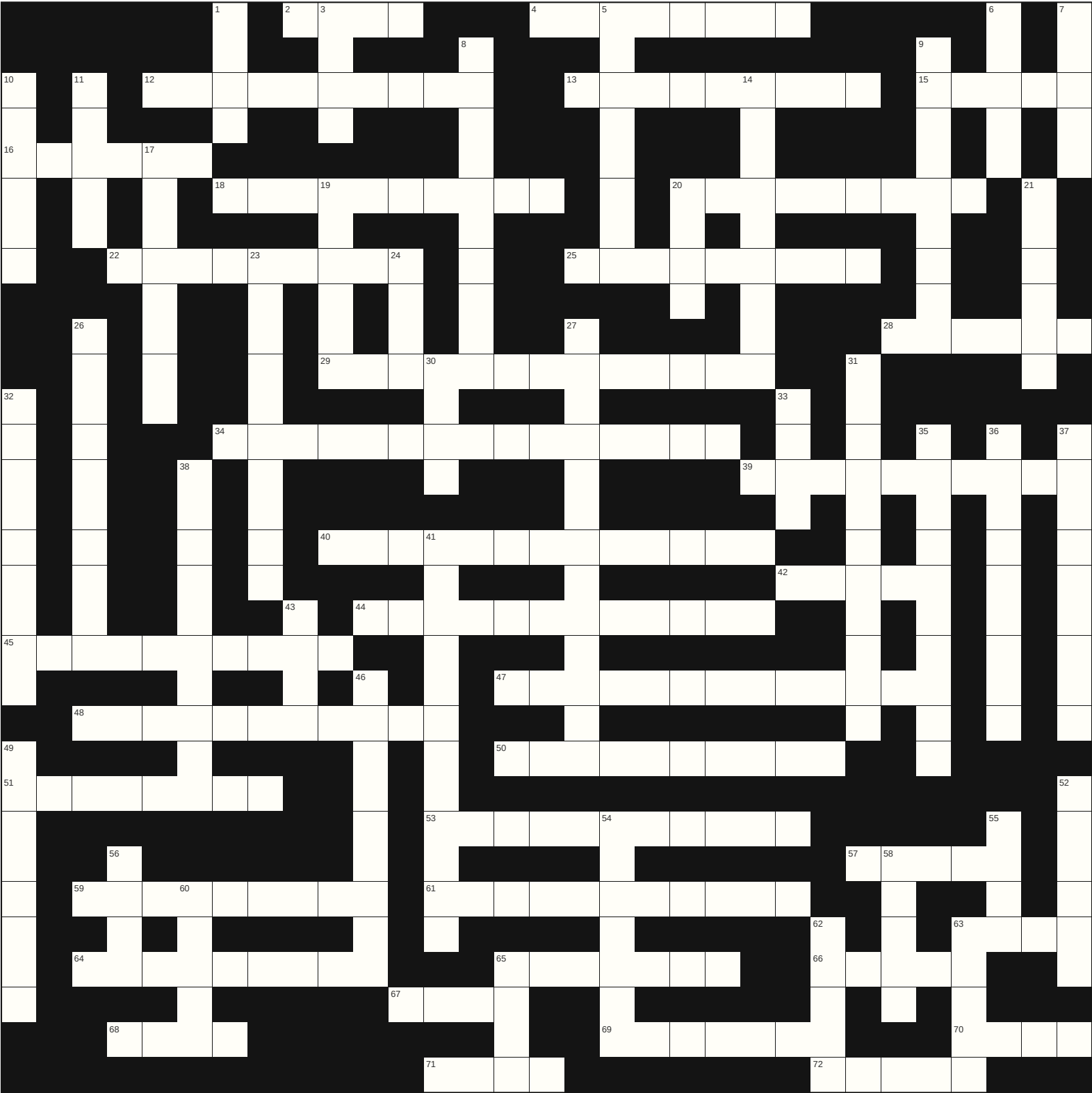
The Giants, as the higher-placed team, need only to avoid losing the series: a draw in games is enough for them. DeNA must win two games.

Both clubs have large followings in the Kanto region, and the series is expected to fill Tokyo Dome, which holds about 43,000 for baseball.

The winner travels to Koshien to face Hanshin from Wednesday, October 14.

CROSSWORD PUZZLE

Today's Professional Puzzle — Constructed by James O'Neill — 75 Words



Solution will appear in tomorrow's edition. Puzzle difficulty: Professional.

ACROSS

2. Jewellery capital of Yamanashi (4)
4. Fragrance company of the menthol process (8)
12. Oldest laureate, at 97 (10)
13. City of the prizes (9)
15. Ikeda's taste, from one form of glutamate (5)
16. Novelist on the old 1,000-yen note (6)
18. Community chest symbol (3,7) (10)
20. Two-time chemistry laureate (9)
22. Tube that cooks (9)
25. The first microwave oven (9)
28. What the commission suspects (6)
29. The islands' ship (9,4) (13)
34. Japan's easternmost island (15)
39. Campus in central Tokyo (10)
40. A reaction that speeds itself up (13)
42. He found quartz turns polarised light (5)
44. Naturalist among the peace favourites (12)
45. Komeito's backers (4,6) (10)
47. Largest Japanese chip-equipment maker (5,8) (13)
48. Sedative of notorious memory (11)
50. Stanford laureate (10)
51. Low-malt beer (8)
53. Launch site of Himawari-8 (11)
57. His seventh win (5)
59. Nominated widow (9)
61. CRISPR laureate working in Berlin (11)
63. Host of the judo worlds (4)
64. Penalty in an administrative case (9)
65. Sugar in milk (7)
66. She wondered about Looking-glass milk (5)
67. American atoll near No. 29 (4)
68. Sound that gave Japanese a verb (4)
69. Tsumagoi's summer crop (7)
70. No. 28, named in Hawaii (4)
71. No record of a meeting (4)
72. Asteroid sampled by Hayabusa2 (5)

DOWN

1. Kagan's ligand of 1972 (4)
3. Beaten at 81 kg (4)
5. Chemistry laureate of 2025 (8)
6. Thunderstorms in the afternoon (5)
7. Hosts Nippon-Ham (5)
8. Inside the storm-wind area by Tuesday (10)
9. Photocatalyst pioneer, once its president (9)
10. Autophagy laureate (6)
11. Kagan's campus south of Paris (5)
14. Maker of IceCube's light sensors (9)
17. First Japanese literature laureate (8)
19. Where that line now stops (6)
20. Japan's new chemistry laureate (4)
21. Down 648 yen to 70,035.71 (6)
23. One of a mirror pair (10)
24. Warmest city, 30 (4)
26. China's National Day holiday (6,4) (10)
27. Last year's literature laureate (13)
30. Only Japanese peace laureate (4)
31. The turn to the north-east (11)
32. Chip tester sold on Wednesday (9)
33. Tokyo Olympic 70 kg champion (4)
35. It caught a supernova's neutrinos in 1987 (10)
36. Medicine laureate of 2025 (9)
37. Raised it to five (9)
38. Dearer after the rain (10)
41. Monday's prize (12)
43. Founder of judo (4)
46. Spencer's oven (9)
49. Market reopening today (8)
52. Korean alphabet celebrated on Friday (6)
54. ___ commerce, in which AI shops (7)
55. Plays the Giants (4)
56. Retains her 63 kg title (4)
58. Briefly above its August high (5)
60. Prefecture whose vice chairman resigns (5)
62. Rio 90 kg champion (5)
63. Asteroid sampled by OSIRIS-REx (5)
65. Strasbourg laureate of 1987 (4)

SPORTS

Judo Today: The Women's 70 kg and the Men's 90 kg, Categories of Arai and Baker

By Haruto Yamamoto | Sports Reporter

The world judo championships in Baku reach their fifth day today with the women's 70 kg and the men's 90 kg categories.

Both have produced Japanese Olympic champions in recent years.

Chizuru Arai won the women's 70 kg at the Tokyo Olympics in 2021, after winning world titles in 2017 and 2018. Her powerful throws and strong groundwork made her one of the most feared fighters of her generation.

Mashu Baker won the men's 90 kg at the Rio de Janeiro Olympics in 2016.

The 90 kg, middleweight, is often called the most open category in men's judo. Champions change frequently, and fighters from Georgia, Greece and Japan, among others, have held world or Olympic titles in it.

The women's 70 kg combines speed with strength and has been dominated in recent years by European fighters, with France, the Netherlands and Croatia strong.

The preliminary rounds begin in the morning, local time. The semi-finals, bronze medal contests and finals are held in the evening session, which begins late at night Japan time.

After today, the championships have two individual days left: the 100 kg and 78 kg on Friday, and the heavyweights on Saturday.

The mixed team event on Sunday brings together three men and three women from each country.

Japan has dominated the mixed team event since it was introduced at the world championships in 2017.

SPORTS

The Mixed Team Event: Three Men, Three Women and a Random Draw If It Comes to Three All

By Haruto Yamamoto | Sports Reporter

The world judo championships end on Sunday with the mixed team event, the newest and in some ways most dramatic format in the sport.

Each team fields six judoka: women in the 57 kg, 70 kg and over-70 kg categories, and men in the 73 kg,

90 kg and over-90 kg categories. Judoka from neighbouring weight classes may move up to fill them.

The two teams fight six individual contests, and the first to four wins takes the match.

If the score reaches three all, a seventh contest decides it. The weight category is chosen by random draw, and the two judoka in that category fight again, a moment of great tension for the fighters and the crowd.

The event was introduced at the world championships in 2017 and at the Olympic Games in Tokyo in 2021.

Japan has dominated it at the world championships. At the Olympics it has been less fortunate: France beat Japan in the final in Tokyo in 2021, and again in Paris in 2024, where the deciding contest was drawn in the heavyweight category and won by France's Teddy Riner.

The format rewards depth. A country needs strong judoka in six categories at once, including the heavyweights, which have not always been Japan's strongest.

It also brings men and women together in a sport that was long organised separately, and many judoka speak of the unusual pleasure of fighting for a team.

Japan will be favourites in Baku, as usual, with France, Georgia and the hosts, Azerbaijan, likely to be among the strongest challengers.

The individual competition continues today with the women's 70 kg and the men's 90 kg.

SPORTS

Baku, Host for a Second Time: How Azerbaijan Became a Power in Judo

By Haruto Yamamoto | Sports Reporter

The world judo championships under way in Baku are the second held in the Azerbaijani capital in eight years. The city also staged them in 2018.

Azerbaijan, a country of about ten million people on the Caspian Sea, has made judo one of its national sports, and its judoka have won Olympic and world titles.

Elnur Mammadli won the Olympic gold medal in the 73 kg category at Beijing in 2008, and the country has produced world champions and medallists in several weights since.

Its success rests partly on wrestling traditions common to the Caucasus, which produce fighters strong in grips and in close combat, and partly on

government investment in sport.

Baku has used major events to raise its international profile. It hosted the first European Games in 2015 and stages a Formula One race through its streets.

The championships are held at the National Gymnastics Arena, a venue built for such events. Home judoka fight before large and loud crowds.

For Japanese judoka, the atmosphere can be a test. Contests against home fighters are fought amid noise that makes it hard to hear coaches.

Japan and Azerbaijan have long-standing judo links, and Japanese coaches and training camps have helped many foreign federations develop their sport.

Judo has spread far beyond the country of its birth. The International Judo Federation counts some 200 national federations as members.

The championships end on Sunday with the mixed team event, in which the hosts will hope to challenge Japan.

SPORTS

Hanshin, Champions Twice in a Row for the First Time, Rest and Wait for Wednesday Week at Koshien

By Haruto Yamamoto | Sports Reporter

The Hanshin Tigers beat Hiroshima 2-1 on Tuesday, in one of their last games of the regular season, with Kotaro Otake earning his seventh win.

They now have a week to wait before the Central League's final stage begins at Koshien on Wednesday, October 14.

Hanshin clinched the league title on October 3, the first time in the club's history that it has won the Central League in consecutive seasons.

The club won the Japan Series in 2023 but lost it last year after winning the league. Its supporters, among the most devoted in Japanese sport, will judge this season by October.

A long rest before the final stage has both advantages and dangers. Tired pitchers recover and injuries heal, but hitters can lose their timing, and teams that have just come through a tense first stage sometimes arrive with momentum.

Hanshin's manager, Kyuji Fukujawa, a former closer for the club, has won the pennant in both of his seasons in charge.

The opponent will be either the Giants, Hanshin's

oldest rivals, or DeNA.

Koshien Stadium, in Nishinomiya, is open to the sky. Unlike the first stages, the final stage depends on the weather in Hyogo Prefecture, and rain can postpone games.

Hanshin begin the series with one win credited to them, and need three more.

The Japan Series opponent, if Hanshin get there, will come from the Pacific League, where SoftBank start their own final stage two wins up.

SPORTS

Hanshin and the Japan Series: Eight Appearances, Two Titles, and Last Year's Defeat by SoftBank

By Oliver Brooks | Sports Desk Editor

For a club with Hanshin's following, its record in the Japan Series is modest, and its supporters know it by heart.

The Tigers have reached the series eight times. They lost to the Toei Flyers in 1962 and to the Nankai Hawks in 1964.

In 1985 they won it for the first time, beating Seibu, in a season remembered for the hitting of Randy Bass and the celebrations in Osaka, where fans famously threw a statue of Colonel Sanders, taken from a fried-chicken restaurant, into the Dotonbori canal. The statue was not recovered until 2009.

The years that followed brought long disappointment. Hanshin lost the Japan Series to Daiei in 2003, to Lotte in 2005, when they were swept in four games, and to SoftBank in 2014.

In 2023, under the manager Akinobu Okada, they won the series for the second time, beating Orix in seven games in an all-Kansai final.

Last year, under Kyuji Fukujawa, they won the Central League again and reached the series, but lost to SoftBank.

This season they have become the first Hanshin side to win the Central League in consecutive years. The Climax Series final stage at Koshien, from Wednesday week, stands between them and a chance of revenge.

If both champions come through, the series would be a repeat of last year's, Hanshin against SoftBank, who start their own final stage two wins up.

Hanshin's supporters, who fill Koshien and many away stadiums, are famous for their songs, their balloons released in the seventh inning and their

SPORTS

loyalty in bad years.

Their patience has been rewarded twice in more than seventy years of Japan Series history. They will hope for a third.

SPORTS

SoftBank Wait in Fukuoka: Ninety-One Wins, Last Year's Japan Series Title and a Head Start of Two

By Haruto Yamamoto | Sports Reporter

The Fukuoka SoftBank Hawks, champions of the Pacific League, have the longest wait of the post-season and the biggest head start.

They finished the regular season with 91 wins, 49 defeats and 3 draws, clear of the rest of the league, and won the title for the third year in a row.

Last year they won the Japan Series, beating Hanshin, a year after losing the series to DeNA.

Under their manager, Hiroki Kokubo, a former star hitter for the club, they have combined deep pitching with a lineup that few teams in Japan can match.

Their opponent in the final stage will be the winner of the first stage between Seibu and Nippon-Ham, which begins on Saturday in Tokorozawa.

Under the rule introduced this season, SoftBank begin the final stage with two wins in hand, because both possible opponents finished ten or more games behind them. The challenger must win four games before SoftBank win two.

The final stage is played at SoftBank's home, the domed stadium in Fukuoka, so the weather will not interfere.

The club, founded in Osaka in 1938 and known for decades as the Nankai Hawks, moved to Fukuoka in 1989 as the Daiei Hawks and has been owned by SoftBank since 2005.

It has become the most successful club in Japanese baseball this century, with a string of Japan Series titles, including four in a row from 2017 to 2020.

For the Hawks, the danger in such a long rest is rustiness. For their opponents, the challenge is arithmetic.

SPORTS

Shinjo's Fighters: From Two Last Places to a Third Straight Play-Off, With a Manager Who Loves a Show

By Haruto Yamamoto | Sports Reporter

The Hokkaido Nippon-Ham Fighters arrive in Tokorozawa on Saturday led by the most theatrical manager in Japanese baseball.

Tsuyoshi Shinjo, a former outfielder for Hanshin and Nippon-Ham who also played in the American major leagues, took charge of the Fighters in 2022. He announced himself with flamboyant costumes and a promise to build a team that played without fear.

His first two seasons ended with the club in last place. Critics wondered whether the showmanship had been a mistake.

Then the young players he had kept faith with began to mature. The Fighters finished second in 2024 and reached the final stage of the Climax Series, and they have returned to the play-offs every season since.

Shinjo was the first Japanese position player to appear in a World Series, with the San Francisco Giants in 2002, and he brought back from America a taste for aggressive base-running and bold decisions.

The club's home since 2023 has been Es Con Field Hokkaido in Kitahiroshima, outside Sapporo, a stadium with a retractable roof and a natural grass field, built by the club itself after it left the Sapporo Dome.

The stadium has become an attraction in its own right, with hot springs and a brewery, and it has helped to draw crowds from across Hokkaido.

In the first stage the Fighters must win two games in Tokorozawa against Seibu, who finished above them and advance if the series is drawn.

If they succeed, they face SoftBank in Fukuoka, two wins down before a ball is thrown.

For a manager who loves a show, October is the biggest stage of all.

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SPORTS

One Win or Two: The New Rule That Gives SoftBank a Bigger Head Start

By Haruto Yamamoto | Sports Reporter

Since 2008, the year after the Climax Series was introduced in both leagues, the league champion has started the final stage with one win already in hand. This season, for the first time, it can be two.

Nippon Professional Baseball announced the change in March, Daily Sports reported at the time.

Under the new rule, the champion receives a two-win advantage if its opponent in the final stage finished the regular season with a losing record, or ten or more games behind the champion. Either condition is enough. Meeting both does not bring a third win.

The change followed years of debate about teams far behind the champions reaching the Japan Series through the play-offs. DeNA did so from third place in 2024, and won the series.

In the Pacific League this year, SoftBank's 91 wins left Seibu, second, more than ten games behind, and Nippon-Ham further still. Whichever wins the first stage, SoftBank will start the final stage needing two wins to the opponent's four.

In the Central League the margin was smaller, and Hanshin start with the usual single win.

Supporters of the rule argue that a 143-game season should count for more than a few games in October.

Opponents say the Climax Series exists to give more teams and more supporters something to play for, and that a bigger head start for the champion reduces the drama that fills stadiums.

The Major Leagues in the United States settle the same argument differently: they give the best teams byes past the first round, but no wins in hand.

How the rule works in practice will be watched in Fukuoka.

SPORTS

The Sports Day Weekend: Play-Offs Under Two Roofs, the Last Day in Baku and the Relay Race in Izumo

By the Sports Desk

Saturday begins a three-day weekend that ends with the Sports Day holiday on Monday, and the calendar is full.

BASEBALL: The Climax Series first stages begin on Saturday: the Giants against DeNA at Tokyo Dome and Seibu against Nippon-Ham in Tokorozawa, best of three, with any third games on Monday.

JUDO: The world championships in Baku hold their last individual day on Saturday, with the heavyweight categories, and end on Sunday with the mixed team event.

ATHLETICS: The Izumo All-Japan University Ekiden, the first of the season's three great university relay races, is run on Monday in Shimane Prefecture.

The relay starts at the gates of Izumo Taisha, one of Japan's oldest and most important shrines, and finishes at the Izumo Dome, over six stages and about 45 kilometres.

It is followed by the All-Japan University Ekiden in November, from Nagoya to Ise, and by the Hakone Ekiden on January 2 and 3, the most watched of all.

NOBEL: The prize in economic sciences is announced on Monday evening, Japan time, closing the week of prizes.

WEATHER: Fine on the main islands, with Typhoon No. 29 very strong over the ocean to the south-east and approaching the Ogasawara Islands early on Monday.

The holiday commemorates the opening of the Tokyo Olympics on October 10, 1964.

Sports Day events are held at schools, parks and community centres across the country, though many schools now hold their sports festivals in May or June.

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SPORTS

The Izumo Ekiden: Six Stages From a Great Shrine, and the First of the University Relay Season

By Haruto Yamamoto | Sports Reporter

Japan's university long-distance runners open their relay season on Monday, the Sports Day holiday, in Izumo, Shimane Prefecture.

The Izumo All-Japan University Selected Ekiden has been held since 1989. Its six stages cover about 45 kilometres, from the gates of Izumo Taisha, one of the country's most venerable shrines, to the Izumo Dome.

It is the shortest of the three great university relays, and its stages, the longest a little over ten kilometres, reward speed more than endurance.

The field brings together the leading universities from the Kanto region, whose teams dominate the sport because of the Hakone Ekiden, along with teams from other regions of Japan.

A selected team from the Ivy League universities of the United States has also taken part over the years, an unusual international touch in a domestic event.

The All-Japan University Ekiden follows in November, over a longer course from Atsuta Shrine in Nagoya to the Ise Shrines in Mie Prefecture.

The season culminates on January 2 and 3 with the Hakone Ekiden, run between Otemachi in central Tokyo and Lake Ashi in the Hakone mountains and back, over two days. It is one of the most watched sporting events of the Japanese year.

Winning all three in one season, the triple crown, is the ambition of every leading team and has been achieved only a handful of times.

The ekiden, a relay in which runners pass a sash rather than a baton, is a Japanese invention. The first is usually dated to 1917, a race between Kyoto and Tokyo.

For the young runners, Izumo is the first test of a season that will decide reputations and, for some, places on professional teams.

SPORTS

Sports Day: From the Opening of the 1964 Olympics to a Monday Holiday With a New Name

By Hana Ito | Research & Archive

The holiday on Monday has its origin in a single afternoon: October 10, 1964, when Emperor Showa opened the Tokyo Olympics at the National Stadium.

The Games were Japan's return to the world, nineteen years after the war. The shinkansen opened days before them, and the opening ceremony, on a clear autumn day, was watched on television across the country.

Two years later, in 1966, October 10 became a national holiday, Health and Sports Day, to commemorate the opening and encourage people to take up sport.

In 2000, under the Happy Monday system that moved several holidays to Mondays to create long weekends, it moved to the second Monday of October.

In 2020 its name was changed to Sports Day, to coincide with the Tokyo Olympics that were to have been held that summer.

That year, and again in 2021, the holiday was moved to July, to the day of the opening ceremony of the delayed Games, so that Tokyo's traffic would be lighter. It returned to October in 2022.

October 10 was chosen in 1964, according to the usual account, because it was statistically one of the days of the year least likely to bring rain in Tokyo.

The day is marked by sports festivals, undokai, at schools and in neighbourhoods, with relays, tug-of-war and ball games. For many Japanese the undokai, with parents filming and families picnicking, is a defining memory of childhood.

The second Monday of October falls this year on October 12, two days after the anniversary itself.

The weekend will include the Climax Series, the end of the world judo championships and the Izumo relay, a fitting programme for a holiday that celebrates sport.

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SPORTS

The Asian Para Games Open in Aichi and Nagoya in Ten Days, on Venues Still Fresh From the Asian Games

By Oliver Brooks | Sports Desk Editor

Ten days from now, on October 18, the Asian Para Games open in Aichi and Nagoya, two weeks after the Asian Games ended there with a record haul of 83 gold medals for Japan.

The Games run until October 24 and use many of the same venues, volunteers and staff as the Asian Games.

They are the fifth Asian Para Games, after Guangzhou in 2010, Incheon in 2014, Jakarta in 2018 and Hangzhou, where the Games postponed from 2022 were held in 2023.

Athletes with physical, visual and intellectual impairments compete in sports adapted to them, including athletics, swimming, wheelchair basketball, boccia and goalball.

For Japan, the Games are the largest para-sport event at home since the Tokyo Paralympics of 2021, which were held without spectators because of the pandemic. This time the stands can be full.

The organisers will be under scrutiny after the operational problems of the Asian Games, which included a team kept waiting at a hotel, buses that failed to arrive and a national anthem played in error.

The resignation of the prefectural assembly's vice chairman, after a dispute with security guards over his car at a venue, has added to the questions about how the Games were run.

Accessibility will be the test the athletes notice first: transport, accommodation and venues that work for wheelchair users and blind competitors.

Japan's para athletes have grown in strength and profile since Tokyo 2021, and the Games are an opportunity to show the public sports they rarely see on television.

The closing ceremony is on October 24.

SPORTS

Scoreboard

By the Sports Desk

WORLD JUDO CHAMPIONSHIPS, BAKU, WEDNESDAY: Women's 63 kg, Haruka Kaju (Japan) wins her second straight title. Men's 81 kg, Yuhei Oino (Japan) beaten.

WORLD JUDO, TODAY: women's 70 kg, men's 90 kg, Friday: women's 78 kg, men's 100 kg, Saturday: over 78 kg, over 100 kg, Sunday: mixed team.

CENTRAL LEAGUE, FINAL: 1 Hanshin, champions; 2 Yomiuri 76-64-3; 3 DeNA 71-69-3.

PACIFIC LEAGUE, FINAL: 1 SoftBank 91-49-3, champions; 2 Seibu 79-60-4; 3 Nippon-Ham.

CLIMAX SERIES, FIRST STAGES, FROM SATURDAY: Giants v DeNA, Tokyo Dome; Seibu v Nippon-Ham, Tokorozawa. Best of three.

FINAL STAGES, FROM WEDNESDAY, OCTOBER 14: Central, at Koshien, Hanshin one win up. Pacific, in Fukuoka, SoftBank two wins up.

EMPEROR'S CUP, WEDNESDAY: Urawa Reds v Omiya Ardija; Cerezo Osaka v Kagoshima United; Sanfrecce Hiroshima v Iwaki FC. Results were not available at press time.

ATHLETICS: Izumo All-Japan University Ekiden, Monday, October 12.

ASIAN PARA GAMES: Aichi and Nagoya, October 18 to 24.

TIME IN BAKU: five hours behind Japan.

CULTURE

The Literature Prize Is Announced Tonight: Japan Has Waited Since 1994, and Murakami's Readers Wait Again

By Naomi Kato | Culture & Society Editor

The Swedish Academy announces the Nobel Prize in Literature this evening, at about 8 p.m. Japan time.

It is the one prize in the week whose shortlist exists only in rumour. The academy publishes nothing about its deliberations until the archives open after 50 years, and the betting markets that offer odds each autumn are as often wrong as right.

Japan has had two laureates in literature. Yasunari

CULTURE

Kawabata won in 1968, the first Japanese writer to do so, for narrative mastery that the academy said expressed the essence of the Japanese mind. Kenzaburo Oe won in 1994.

Kazuo Ishiguro, the laureate of 2017, was born in Nagasaki and moved to Britain as a child; he writes in English and is a British citizen.

For nearly two decades, Haruki Murakami has been named every October as a possible winner, and his readers have gathered in cafes and bookshops to wait for the announcement. Each year so far they have gone home disappointed.

The academy's choices in recent years have ranged widely. Last year it chose the Hungarian novelist László Krasznahorkai. The South Korean writer Han Kang, the first Asian woman to win, received the prize in 2024, and the Norwegian playwright and novelist Jon Fosse in 2023.

The academy went through a crisis in 2018, when a scandal involving the husband of one of its members led it to postpone that year's prize. Two prizes were announced in 2019, to Olga Tokarczuk of Poland for 2018 and Peter Handke of Austria for 2019.

A prize for a Japanese writer would make news far beyond the literary world. Translations, which carry Japanese fiction to the academy's members, have multiplied in recent years, and Japanese novelists have won international prizes and found large readerships abroad.

Bookshops are prepared either way. Many keep the books of the leading candidates ready to put on display within minutes of the announcement.

The prize, like the others, is presented on December 10 in Stockholm.

CULTURE

Eighteen Chairs in the Old Town: The Swedish Academy That Announces Tonight's Prize

By Naomi Kato | Culture & Society Editor

The literature prize announced this evening is the work of a body older than the Nobel prizes by more than a century: the Swedish Academy.

King Gustav III founded it in 1786, on the model of the Académie française, to promote the purity, strength and dignity of the Swedish language. Its motto is Snille och smak, talent and taste.

It has 18 members, each occupying a numbered chair, and membership was traditionally for life. After the crisis of 2018 the king changed the statutes so that members could resign and be replaced.

Its everyday work is still the Swedish language. It publishes the standard Swedish word list and dictionaries, and awards prizes to Swedish writers.

Alfred Nobel's will gave it a second task: to award a prize each year to the author who had produced the most outstanding work in an ideal direction, a phrase that has been interpreted in many ways since.

A committee of the academy prepares the choice. It receives nominations from members of academies, professors of literature and languages, former laureates and the presidents of writers' organisations, and narrows them to a long list and then a shortlist.

The members read the shortlisted authors' works over the summer and vote in the autumn. The winner needs more than half of the votes.

The announcement is made from the academy's rooms in the Stock Exchange Building in Stockholm's Old Town, by its permanent secretary, who opens a pair of white doors and reads the name in several languages.

The academy's choices have often surprised, and sometimes angered, readers. Tolstoy, Ibsen, Joyce and Proust never won.

Japan's two laureates, Yasunari Kawabata and Kenzaburo Oe, were chosen in 1968 and 1994. Whether a third will be named tonight will be known at about 8 p.m.

CULTURE

Two Lectures in Stockholm: Kawabata's Beautiful Japan and Oe's Ambiguous One

By Naomi Kato | Culture & Society Editor

Every Nobel laureate in literature gives a lecture in Stockholm, and Japan's two laureates used theirs to answer the same question in opposite ways.

Yasunari Kawabata, honoured in 1968, called his

lecture Japan, the Beautiful and Myself. He spoke in Japanese and in a traditional manner, quoting medieval Buddhist poets and the monk Dogen, and describing a sensibility of seasons, snow, moon and flowers.

The lecture presented Japanese culture as a world of subtle beauty and emptiness, rooted in Zen and the classical tradition. It was received abroad as a portrait of an eternal Japan.

Kawabata's novels, among them Snow Country, Thousand Cranes and The Old Capital, were the works the academy had in mind. He died in 1972.

Kenzaburo Oe, honoured in 1994, gave his lecture a title that deliberately echoed and answered Kawabata's: Japan, the Ambiguous, and Myself.

Oe argued that modern Japan was split between its Asian roots and its rush to Westernise, and that its ambiguity had led it to aggression in the war. He spoke of the victims of the atomic bombs and of his son Hikari, born with a brain injury, who became a composer.

Where Kawabata looked to an aesthetic past, Oe looked to a moral future, and to the post-war constitution and democracy.

The two lectures have been read together ever since, in Japan and abroad, as a dialogue between two generations about what Japan is.

Oe died in 2023, at 88. He remained an outspoken voice on peace and nuclear power to the end of his life.

Whoever receives the prize tonight will be expected to give a lecture of their own in December, and to add to that conversation, whether or not they are Japanese.

CULTURE

Botchan's Diploma: The Novel Whose Hero Graduated From the School That Became Tokyo University of Science

By Naomi Kato | Culture & Society Editor

Natsume Soseki's Botchan, published in 1906, is one of the most widely read novels in Japanese, and its hero has a connection to this week's prize.

The narrator, a hot-tempered and honest young man from Tokyo, explains near the beginning that he enrolled at a school of physics more or less by chance, after seeing an advertisement for it. He graduates, and is offered a post teaching mathematics at a middle school in Shikoku.

The school of physics was real: the Tokyo School of Physics, founded in 1881, which became Tokyo University of Science, where Kenso Soai is a professor emeritus.

Soseki himself taught English at a middle school in Matsuyama, in Shikoku, in 1895 and 1896, and the novel draws on that experience. Matsuyama has embraced the connection ever since, from a tourist train named after the novel to a hot spring the hero visits.

The book's comedy comes from the collision between its blunt hero and the petty intrigues of the provincial school's staff, to whom he gives nicknames such as Red Shirt and the Clown. He sides with the decent and quarrels with the devious, and he leaves the town at the end with his principles intact and his career in ruins.

Its lasting popularity owes much to that character: impulsive, incorruptible and unable to hide what he thinks.

The choice of the school of physics in the novel was apt. The school had a reputation for admitting almost anyone and graduating few, and its graduates went out to teach the mathematics and science the new Japan needed.

Tokyo University of Science acknowledges the connection, and the novel is often mentioned in accounts of the university's history.

Soseki, whose portrait was on the 1,000-yen note from 1984 to 2004, is one of the founders of the modern Japanese novel.

Botchan, more than a century old, is still on school reading lists. Its hero would probably have been pleased to hear that his school had produced a Nobel laureate, and characteristically suspicious of the ceremony.

CULTURE

'Perhaps Looking-Glass Milk Isn't Good to Drink': How Alice Became the Patron of Mirror-Image Chemistry

By Naomi Kato | Culture & Society Editor

In Lewis Carroll's Through the Looking-Glass, published in 1871, Alice holds her kitten up to the mirror over the mantelpiece and tells it about the house on the other side.

'How would you like to live in Looking-glass House, Kitty?' she asks. 'I wonder if they'd give you milk in there? Perhaps Looking-glass milk isn't good to drink.'

Carroll, a mathematician at Oxford whose real name was Charles Dodgson, could not have known how good a question it was. The modern understanding of molecular handedness was only beginning; Louis Pasteur had discovered it in 1848, but the structures that explain it came later.

Chemists have quoted Alice ever since. Milk contains handed molecules: the sugar lactose and the proteins are built from components of one hand. In a mirror world, every one of them would be reversed.

Whether looking-glass milk would nourish a kitten from our side of the glass is a serious question. Enzymes that digest lactose and proteins are themselves handed, and they would fit the mirror molecules about as well as a right hand fits a left glove.

The kitten would at best get little nourishment. Some mirror-image molecules are harmless, some useless and some harmful, which is the lesson of chiral medicines.

The question has become less hypothetical. Scientists have made mirror-image versions of some proteins and genetic molecules in the laboratory, and in recent years a group of researchers has warned against attempts to build entire mirror-image bacteria, which they fear could evade the defences of living things.

Kenso Soai's reaction speaks to the other side of the question: why our world is not mixed, with left and right in equal measure, but one-handed, so that the milk on our side of the glass is all of a kind.

Through the Looking-Glass has been translated into Japanese many times, and Alice, in both of her books, is as familiar in Japan as anywhere.

Its chess-game plot and its reversals of logic have made it a favourite of scientists, who find in it, a century and a half later, a better question than its author meant to ask.

CULTURE

Left-Handed Snails and Right-Handed Snakes: Handedness in Nature, as Studied in the Islands of Southern Japan

By Maya Suzuki | Science & Innovation Desk

Handedness is not only a property of molecules. Some of the most striking examples in nature have been studied by Japanese biologists in the islands of the south-west.

Most snails coil in one direction. Seen with the opening facing the viewer, the great majority of species have shells that spiral to the right, and only a small minority to the left.

The direction is set very early in the development of the embryo, and it is inherited. A single gene can reverse it.

In Southeast Asia and the Ryukyu Islands live small snakes that feed almost entirely on snails. Japanese researchers found that these snakes have more teeth on one side of the lower jaw than the other, an adaptation for extracting the soft bodies of right-coiling snails from their shells.

The snakes struggle with left-coiling snails, which are mirror images of their usual prey. In experiments, left-coiling snails often survived attacks that would have killed right-coiling ones.

The researchers, led by the biologist Masaki Hosono, reported that left-coiling snail species have arisen unusually often in the regions where these snakes live, suggesting that predation can drive the evolution of mirror-image forms. The findings were published in scientific journals in 2007 and 2010.

The work is a vivid demonstration that handedness matters in biology at every scale. A key that fits one

lock will not fit its mirror image, whether the key is a molecule, a jaw or a shell.

The human body has its asymmetries too. The heart lies to the left, the liver to the right, and in rare cases the arrangement is reversed.

At the root of all of them is the one-handedness of life's molecules, the puzzle on which Kenso Soai's reaction sheds light.

Shell collectors have long prized left-coiling specimens of normally right-coiling species, which are rare. Nature, it seems, prefers one hand, but leaves room for exceptions.

CULTURE

Left-Handed and Right-Handed Quartz: The Crystals That Can Tip the Soai Reaction, and the Yamanashi Craft Built on Them

By Maya Suzuki | Science & Innovation Desk

Among the triggers that can decide which hand Kenso Soai's reaction produces, the most beautiful is quartz.

Quartz, crystalline silicon dioxide, is one of the commonest minerals on Earth. Its atoms are arranged in spirals that turn either to the left or to the right, so that its crystals come in two mirror-image forms. Both forms occur in nature in roughly equal numbers.

The handedness of quartz was recognised long before that of molecules. Early in the 19th century the French physicist François Arago found that quartz rotates the plane of polarised light, and later work showed that left- and right-handed crystals rotate it in opposite directions.

In 1999 Mr Soai's group reported that adding left- or right-handed quartz to the reaction decided the hand of the product. A mineral that formed on the early Earth could thus, in principle, have set the direction of a chemical process.

In Japan, quartz has a long cultural history of its own. Rock crystal, the clear form of quartz, was once mined in the mountains of Yamanashi Prefecture, west of Tokyo, and the craft of cutting and polishing it grew into the jewellery industry for which Kofu, the prefectural capital, is known today.

Mineralogists around the world use a Japanese name for a particular way in which two quartz crystals can grow together, joined at an angle like a heart or a pair of wings. The Japan-law twin takes its name from fine specimens found in Japan in the 19th century.

Quartz has modern uses too. Thin slices of it vibrate at a precise frequency when a voltage is applied, a property that keeps time in watches and computers. The first quartz wristwatch sold to the public, the Astron, was made by Seiko in 1969.

Industrial quartz for such uses is now grown artificially, and the crystals can be grown as left- or right-handed as required.

Pasteur's tartrate crystals, Arago's quartz and Mr Soai's reaction belong to the same story: the discovery that nature distinguishes left from right at every scale, from minerals to molecules.

Visitors to Kofu can still see crystal craft at the city's museums and workshops.

CULTURE

Ebisu: The Tokyo District That Took Its Name From a Beer, and the Brewery That Became a Garden

By Kenji Fukuda | Real Estate & Urban Development

Few places in the world are named after a beer. Ebisu, one of Tokyo's most fashionable districts, is one of them.

In 1890 the Japan Beer Brewery Company launched a beer called Yebisu, after Ebisu, the god of fishermen and commerce, one of the Seven Gods of Good Fortune. It was brewed at a plant in what was then a rural part of Shibuya.

The beer sold well, and in 1901 a freight station was opened on the railway beside the brewery to carry it to market. The station took the beer's name, and passenger services followed a few years later.

The surrounding area gradually adopted the name too, and in time it became the official name of the district.

The brewery passed through the mergers of the Japanese beer industry and ended up with Sapporo. It closed in 1988, as Tokyo land became too valuable for factories.

CULTURE

On its site Sapporo built Yebisu Garden Place, a complex of offices, shops, a hotel, restaurants and a museum, which opened in 1994. It was one of the largest redevelopment projects of its time.

The museum tells the history of the beer, which Sapporo still brews, and the district's railway station plays the theme of an old advertisement for it as its departure melody.

Ebisu has since become one of the most sought-after addresses in Tokyo, known for restaurants and small bars, and as a place where a stroll after work often ends with a glass.

Its history is a reminder of how closely Japan's beer industry was bound up with the growth of its cities. Breweries needed water, land and transport, and the railways that carried their beer shaped the places around them.

The beer business in Japan has changed beyond recognition since 1890. The name of a district is one of the few things from its beginnings that has not.

CULTURE

Ginza's Beer Hall of 1934: Japan's Oldest Surviving Beer Hall, With a Mosaic of the Barley Harvest

By Grace Park | Food & Restaurants

On the ground floor of a building in Ginza 7-chome, a beer hall has been pouring since 1934. It is the oldest surviving beer hall in Japan.

It was built by Dai Nippon Beer, the company that then dominated Japanese brewing, as the ground floor of its head office building, and it opened in April 1934.

Its architect, Eizo Sugawara, designed an interior meant to evoke the barley fields and the brewing of beer, with tiled walls, wooden fittings and, on the main wall, a large glass mosaic of women harvesting barley.

The hall survived the air raids of 1945, which destroyed much of Ginza, and after the war it was used for a time by the occupation forces.

Dai Nippon Beer was broken up in 1949 under the occupation's policy of dissolving large business combinations, and its successors became Sapporo and Asahi. The hall is run today by a Sapporo group company.

The hall has been registered by the government as a tangible cultural property.

For many Tokyo office workers, a visit to the hall is a ritual of summer, and of the end of the year. Its customers range from tourists to regulars who have been coming for decades.

The beer hall, as an institution, came to Japan from Germany and became a fixture of the modern city in the early 20th century, part of the same transformation that made beer a Japanese drink.

Beer's place in Japanese life has changed since then. Younger people drink less, and the brewers compete for a shrinking market, a background against which the commission's investigation must be seen.

The hall in Ginza endures, a reminder of the decades when a glass of draught beer was one of the city's great modern pleasures.

CULTURE

Koyo: Why Leaves Turn Red and Gold, and Why Mornings Like Thursday's Start the Season

By Naomi Kato | Culture & Society Editor

Thursday's cold start in the north, 6 degrees in Kushiro and 8 in Nagano, is the kind of morning that sets Japan's autumn colours in motion.

Leaves are green in summer because of chlorophyll, the pigment that captures sunlight. As the days shorten and the nights grow cold, deciduous trees stop making it and break down what they have.

The yellows and oranges were there all along. Pigments called carotenoids, hidden in summer by the green, appear once the chlorophyll is gone, which is why ginkgo trees turn a clear gold.

The reds are made fresh. In maples, sugars trapped in the leaf are turned into pigments called anthocyanins, and the colour is richest after a run of sunny days and cold nights, the pattern of a fine autumn.

Japanese gardeners and forecasters commonly say that the colouring begins once the minimum temperature falls below about 8 degrees, and speeds up below 5.

The season starts in the mountains of Hokkaido. The slopes of Daisetsuzan, in the centre of the island, are usually the first in Japan to turn, from the middle of September, and the colour moves south and down the mountains through October and November.

In Tokyo and Kyoto the maples usually reach their best in late November or early December, later than they did a few decades ago as autumns have grown warmer.

The Japan Meteorological Agency still records the dates on which maples and ginkgo trees at its observatories change colour, one of the few seasonal observations of plants it has kept.

Viewing autumn leaves, momijigari, has been a pastime since the Heian period. The Tale of Genji includes a chapter named after a celebration among autumn leaves, and temples in Kyoto now draw crowds so large that some limit entry.

Thursday's sunshine across the country makes this the start of the season's first good viewing in the north.

CULTURE

Autumn Festivals: The Calendar

By the Culture Desk

NAGASAKI KUNCHI: Suwa Shrine and the city's streets, to Friday, October 9.

TAKAYAMA AUTUMN FESTIVAL: Sakurayama Hachiman Shrine, Gifu, Friday and Saturday, October 9 and 10.

SPORTS DAY: Monday, October 12; sports festivals in schools and neighbourhoods.

NADA NO KENKA MATSURI: the fighting festival of Himeji, Hyogo, October 14 and 15.

KAWAGOE FESTIVAL: floats in the old merchant town in Saitama, Saturday and Sunday, October 17 and 18.

JIDAI MATSURI: Kyoto's procession of historical costume, Thursday, October 22.

KURAMA FIRE FESTIVAL: torches in the village of Kurama, north of Kyoto, the same night.

READING WEEK: October 27 to November 9.

CULTURE DAY: Tuesday, November 3, a national holiday.

SHICHI-GO-SAN: shrine visits for children of three, five and seven, around November 15.

CULTURE

From the Sacred Mirror to the Magic Mirror: Reflections in Japanese History

By Hana Ito | Research & Archive

This week's prize was awarded for chemistry that distinguishes a molecule from its mirror image. In Japanese culture, the mirror has an older and more sacred meaning.

One of the three imperial regalia, the Sacred Treasures handed down with the throne, is a mirror, the Yata no Kagami. According to the myths recorded in the eighth century, it was used to lure the sun goddess Amaterasu out of the cave in which she had hidden, plunging the world into darkness.

The mirror is kept at the Ise Shrines, and it is never shown. Mirrors are among the most common objects of worship in Shinto shrines.

When the inner shrine at Ise is rebuilt, as it is every 20 years, the sacred objects are moved to the new sanctuary in a ceremony at night. The most recent rebuilding was completed in 2013, and the next is due in 2033.

Bronze mirrors reached Japan from China in ancient times and were treasured by rulers. A Chinese chronicle records that the Wei court sent a hundred bronze mirrors to Himiko, the queen of Wa, in the third century, and many bronze mirrors have been found in burial mounds of the period.

Craftsmen in Japan later made mirrors of their own, and in the Edo period polished bronze mirrors were common household objects until glass mirrors replaced them in the Meiji era.

A curious kind of bronze mirror, sometimes called a magic mirror, projects a hidden image when sunlight is reflected from its polished face onto a wall. The effect comes from tiny differences in the curvature of the surface, produced as the back's design is cast and polished. A few craftsmen in Kyoto still make them.

Some Japanese magic mirrors concealed Christian images, used by hidden Christians during the

centuries when their faith was banned.

A mirror image is not the same as the original, a point every child discovers by raising a right hand and seeing the reflection raise its left.

Lewis Carroll's Alice, wondering whether Looking-glass milk is good to drink, made the same point in fiction. The chemists honoured this week made it in molecules.

The mirror, in Shinto, is said to reflect the heart of the one who looks into it. In chemistry it reflects something just as fundamental: the handedness of life.

CULTURE

Alfred Nobel: The Inventor of Dynamite Who Left His Fortune to Science, Literature and Peace

By Hana Ito | Research & Archive

The man whose name is on this week's prizes was a chemist, an engineer, an industrialist and, by some accounts, a lonely and pessimistic man who wrote poetry.

Alfred Nobel was born in Stockholm on October 21, 1833, the son of an inventor and engineer. He grew up partly in St Petersburg, where his father made mines and machinery for the Russian state, and was educated by tutors in chemistry and languages.

His fortune came from explosives. Nitroglycerine, discovered by an Italian chemist in 1847, was powerful but dangerously unstable; an explosion at the family's works in 1864 killed several people, among them his younger brother Emil.

In 1867 Nobel patented dynamite, nitroglycerine absorbed into a porous earth that made it safe to handle. It transformed mining, tunnelling and the building of railways and canals around the world. He went on to invent other explosives and held hundreds of patents.

According to a familiar story, a French newspaper mistook the death of his brother Ludvig in 1888 for his own and published an obituary calling him a merchant of death. Whether or not that moved him, his will showed a concern for how he would be remembered.

He signed it in Paris on November 27, 1895, leaving the bulk of his fortune to establish prizes for those who had conferred the greatest benefit on mankind in physics, chemistry, physiology or medicine, literature and peace.

He specified that the peace prize should be awarded by a committee chosen by the Norwegian parliament. Sweden and Norway were then united under one king, and his reasons were never explained.

Nobel died in San Remo, Italy, on December 10, 1896, the date on which the prizes are now presented. His relatives contested the will, and it took several years to establish the foundation that awards them.

The first prizes were presented in 1901. The prize in economic sciences was added by Sweden's central bank in 1968, in his memory.

Nobel never married. He corresponded for years with Bertha von Suttner, an Austrian writer who had briefly worked as his secretary and became a leading campaigner for peace; in 1905 she was awarded the peace prize.

The element nobelium is named after him. So, in a sense, is the long watch of every scientist who hopes one day to receive a telephone call from Stockholm.

CULTURE

The Medal: Nature Unveiled by the Genius of Science, a Line From Virgil and About 175 Grams of Gold

By Naomi Kato | Culture & Society Editor

In December Kenso Soai and Henri Kagan will each receive a Nobel medal, among the most famous objects in science.

The medals for physics and chemistry share a design by the Swedish engraver Erik Lindberg. On one side is the profile of Alfred Nobel. On the other, Nature appears as a goddess holding a horn of plenty, while the Genius of Science lifts the veil from her face.

Around the edge runs a line from Virgil's Aeneid: Inventas vitam iuvat excoluisse per artes. It is usually translated as a tribute to those who improved life on earth through the arts they discovered.

The laureate's name is engraved on a tablet beneath

the figures.

The medals have been made of 18-carat gold plated with 24-carat gold since 1980, and weigh about 175 grams. Earlier medals were made of 23-carat gold.

The medals for medicine, literature and peace have their own designs, and the medal for economic sciences, which is not one of the original Nobel prizes, has its own as well.

Medals have occasionally changed hands. In 2022 the Russian journalist Dmitry Muratov, a peace laureate of 2021, sold his at auction for more than 100 million dollars and gave the money to help Ukrainian children displaced by the war.

The chemistry medal has been presented to Japanese laureates nine times before. Mr Soai's will be the tenth.

The diplomas presented with the medals are works of art in their own right, each designed individually.

Some medals have survived extraordinary adventures. In 1940, as German forces occupied Copenhagen, the Hungarian chemist George de Hevesy dissolved the medals of two German physicists in acid at Niels Bohr's institute to keep them from the Nazis. After the war the gold was recovered from the solution and the medals were struck again.

The first chemistry medal, in 1901, went to the Dutch chemist Jacobus van 't Hoff, who as a young man had proposed that the four bonds of a carbon atom point to the corners of a tetrahedron, the idea that explained molecular handedness. This week's prize closes a circle that began with him.

CULTURE

December in Stockholm: Lectures, the Concert Hall and a Banquet for 1,300 at the City Hall

By Naomi Kato | Culture & Society Editor

For Kenso Soai and Henri Kagan, the announcement is the beginning of a busy season that culminates in Stockholm in December.

Nobel Week brings the laureates to the Swedish capital in the days before December 10, the anniversary of Alfred Nobel's death. Each gives a Nobel lecture on the work that won the prize, and the lectures are published and broadcast.

On December 10 the prizes in physics, chemistry, physiology or medicine, literature and economic sciences are presented at the Stockholm Concert Hall by the King of Sweden. The Peace Prize is presented on the same day in Oslo.

Each laureate receives a gold medal, a diploma designed individually by artists and calligraphers, and a document confirming the prize money.

The ceremony is followed by a banquet in the Blue Hall of Stockholm City Hall for about 1,300 guests, among them members of the royal family. The menu is kept secret until the evening. One laureate from each prize gives a short speech.

Laureates are allowed to bring family and guests, and many Japanese laureates have attended with their spouses, whose remarks to the Japanese press have become a part of the national coverage.

Dress is formal: white tie and tails for men, evening gowns for women, though laureates may wear national dress instead.

The week also includes visits to schools and universities and a reception at the royal palace.

For Mr Kagan, who is 95, the journey will be a test of stamina. Laureates unable to travel may receive their medals in their home countries, as several elderly laureates have done.

Japan's reporters will be there in force. A Japanese laureate in Stockholm has become one of the fixed points of the country's December news.

By tradition, laureates also sign the underside of a chair in the cafe of the Nobel Prize Museum in Stockholm, and many donate to the museum an object connected with their work.

Last year Japan had two laureates, Susumu Kitagawa in chemistry and Shimon Sakaguchi in medicine, the first such pair since 2015. This year Mr Soai is so far the only one, unless tonight or Monday brings another.



Editorial cartoon by Taro Suzuki for The Japan Morning Post.

EDITORIAL

The Long Watch. The Prize Is the Work.

Three Nobel prizes in three days have rewarded patience measured in decades. Japan should ask whether it is still paying for the patience that will win the prizes of 2050

By Samantha Ortiz | Editorial Page Editor

Taro Suzuki's cartoon today is set at night in an old laboratory. A crescent moon hangs in the window. Three lamps burn over a long wooden bench, and under each lies the object of a lifetime's attention: a glass tank of ice threaded with points of light, a pair of molecular models standing face to face like reflections, and a nerve cell lit by a thin blue beam. A small American flag and a Japanese one stand at the end of the bench. Across the front runs a ribbon with five words: the prize is the work.

It is a fair summary of the week. On Monday, Tuesday and Wednesday the Nobel committees in Stockholm honoured three bodies of work in medicine, physics and chemistry. What they have in common is not a field or a nationality but a quality that is easy to praise and hard to pay for: patience.

Three long fuses

Begin with Monday's prize. Karl Deisseroth of Stanford University and the German biophysicists Peter Hegemann and Georg Nagel were honoured for optogenetics, the technique of switching nerve cells on and off with light.

The technique made its name in neuroscience in 2005, when Mr Deisseroth's laboratory showed that nerve cells given a protein from a green alga would fire at a flash of blue light. But the protein itself was described in 2002 and 2003 by Mr Nagel, Mr Hegemann and their colleagues, and their work rested on years of patient study of how a single-celled alga senses light and swims towards it. Nobody studying the swimming of algae in the 1980s and 1990s was promising a revolution in brain research. They were curious.

Tuesday's prize went to Francis Halzen of the University of Wisconsin for IceCube, the neutrino observatory buried in a cubic kilometre of ice at the South Pole. The idea of using the Antarctic ice as a detector was pursued through the 1990s with a smaller forerunner. IceCube's construction took until December 2010. The first neutrinos with energies high enough to point to sources far beyond the solar system were found in its data in 2012, by a team at

Chiba University, and it took years more to trace some of them to their sources.

On Wednesday, Henri Kagan of France and Kenso Soai of Tokyo University of Science were honoured for non-linear effects and autocatalysis in asymmetric synthesis. Mr Kagan described the non-linear effect in 1986, and his earlier catalyst design dates from 1972. Mr Soai published the reaction that bears his name in 1995, after a first, modest attempt in 1990. The theory his reaction confirmed had been set out by the British physicist Charles Frank in 1953.

Add up the intervals. Thirty-one years from Mr Soai's paper to Stockholm. Forty years from Mr Kagan's discovery. More than twenty years from the algal proteins. Decades from the first holes drilled in the ice. These were not lucky strikes. They were long watches, kept through nights like the one in the cartoon, by people who could not know whether anything would come of them.

A Japanese habit

Japan's own laureates tell the same story, again and again.

Isamu Akasaki kept working on gallium nitride as a material for blue light-emitting diodes through the 1970s and 1980s, when most researchers had given it up as hopeless. He and Hiroshi Amano made their decisive advances at the end of the 1980s, and the prize came in 2014.

Yoshinori Ohsumi began watching yeast cells digest their own contents under a microscope in 1988, in a field so unfashionable that few others were working in it. His prize, for autophagy, came in 2016.

Satoshi Omura collected soil samples for years in search of useful microbes, and a bacterium from soil near a golf course in Shizuoka became the source of a drug that has protected hundreds of millions of people from river blindness. Shimon Sakaguchi pursued the idea of cells that restrain the immune system through years in which many immunologists doubted they existed, and was honoured last year. Susumu Kitagawa has spoken of the usefulness of the

seemingly useless, an old idea that guided his work on porous frameworks in the 1990s.

The lesson is not that every long watch ends in Stockholm. Most do not. It is that the discoveries that do win prizes almost always come from people who were allowed to keep watching when it was not obvious that they should.

Why patience is expensive

Patience sounds free. It is not. A scientist who stays with a question for thirty years needs a salary for thirty years, a laboratory, students, equipment, and an institution willing to wait. She needs funding that does not demand a deliverable every twelve months. She needs to be allowed to fail, often, without losing her job.

The typical Japanese grant for basic research runs for three to five years. A question like Mr Soai's, or Mr Halzen's, takes far longer than that to answer, and the scientists who pursue such questions spend much of their time applying for the next grant before the last has run out.

Above all she needs a system that values curiosity before its uses are known. None of this week's prizes would have survived a funding committee that insisted on a practical application at the outset. The swimming of algae, the behaviour of neutrinos and the way a molecule might copy its own handedness were questions about nature, not products.

Curiosity also pays in ways no one can plan. Kamiokande, the detector built in a mine in Gifu in the early 1980s, was designed to look for the decay of the proton, which it never found. In February 1987 it caught neutrinos from an exploding star in a neighbouring galaxy, a discovery honoured with Masatoshi Koshiba's prize in 2002, and its successor, Super-Kamiokande, found that neutrinos have mass, the discovery honoured with Takaaki Kajita's prize in 2015.

The applications came later, and they are large. Optogenetics has become one of the basic tools of neuroscience. IceCube has opened a new window on the most violent places in the universe. And the chemistry of handedness bears on how medicines are made and on one of the deepest questions in biology, why life uses only one hand.

Mr Soai, speaking on Wednesday evening, described his achievement as the product of a high standard of

research in Japan. It was a generous remark and a true one. It should also prompt a question. Is the environment that produced his work in the 1980s and 1990s the environment Japan offers its young scientists today?

The environment, measured

The honest answer is that it is not as strong as it was, and the government's own statistics say so.

The National Institute of Science and Technology Policy, which tracks Japan's research performance, publishes each year the share of the world's most cited scientific papers produced by each country. Around the turn of the century Japan ranked fourth in the number of papers among the top ten per cent most cited. In recent editions it has ranked thirteenth.

Part of that decline reflects the rise of others, above all China, which now produces more highly cited papers than any other country. But Japan has not merely been overtaken. Its own output of the most influential research has stagnated while that of comparable countries has grown.

The causes are well documented. After the national universities were turned into independent corporations in 2004, the government reduced their basic operating grants, the money that pays for permanent staff and day-to-day research, by about one per cent a year for more than a decade. The total fell from about 1.24 trillion yen in 2004 to about 1.08 trillion yen in recent years.

Money was moved instead into competitive grants for specific projects, on the theory that competition would reward excellence. It did reward some. It also produced a generation of researchers on short contracts, moving from project to project, writing applications and reports instead of doing science, and unable to commit to the kind of long question that wins prizes thirty years later.

The number of young Japanese entering doctoral programmes has fallen since the early 2000s. Many of the ablest students have concluded, rationally, that an academic career offers too little security for too much effort.

The waste of talent is sharpest among women. Women make up less than a fifth of Japan's researchers, the lowest share among the major industrial democracies. A country that wants more laureates cannot afford to lose so many of its

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potential scientists before they reach the bench.

Mr Soai's generation built careers in a different world, with stable posts and modest but dependable funding for curiosity. The prizes of this decade are the dividends of that investment. Japan has been living on its scientific capital.

What the government has done

The government has not ignored the problem. It created a fund of ten trillion yen to support a small number of universities aspiring to the first rank internationally, and certified Tohoku University as the first in 2024. It has promised to raise support for doctoral students, and it has spoken repeatedly of science and technology as the foundation of economic security.

These are welcome steps. But a fund for a handful of elite universities does not reach the many laboratories across the country where unexpected discoveries are made, often by people no committee would have picked in advance. Mr Soai did his work at a private university, without the operating grants of the national ones.

Concentration has its place. So does breadth. Science is not a portfolio in which the winners can be chosen beforehand. It is closer to an ecosystem, in which diversity is the condition of surprise.

The laureates' warning

Japan's laureates have been saying this for years. Yoshinori Ohsumi used the attention of his prize to warn that Japanese science was becoming too focused on research with obvious uses, and set up a foundation to support basic research with private donations. Others among the country's laureates have voiced similar concerns about the conditions facing young researchers.

Their warnings carry particular weight because they are not special pleading. Men and women who have already won the highest honour in science have nothing to gain for themselves from more funding for the young. They speak because they remember what made their own work possible.

Mr Soai's words on Wednesday belong in the same tradition. A high standard of research does not maintain itself. It is maintained by budgets, year after year.

The bench has two flags

The cartoonist has put an American flag beside the Japanese one, and the point deserves emphasis on this page, which has long argued that the alliance between Japan and the United States is the foundation of this country's security.

The alliance is not only a matter of ships and aircraft. It is also a partnership of laboratories. IceCube is an American-led project, funded mainly by the National Science Foundation, in which Chiba University is a member and to which Japanese engineers have contributed sensors. Every one of its more than five thousand detectors looks into the ice through a light sensor made by Hamamatsu Photonics of Shizuoka. Two of this week's laureates work in the United States. Three of Japan's own Nobel laureates in physics became American citizens.

Openness has drawn Japanese talent across the Pacific for generations. Syukuro Manabe, who became an American citizen, said after winning his prize in 2021 that he had stayed in the United States partly because he could pursue his research there as he wished. Japan should take that as a challenge, not a reproach: the aim is a research system its own scientists do not feel they must leave.

That partnership now faces a test. The American administration's budget request for 2026 proposed cutting the National Science Foundation's budget by more than half, along with deep cuts to the agencies that fund medical research. Whatever Congress finally decides, the direction of the debate in Washington is unmistakable, and American scientists are asking whether the system that made their country the world's scientific leader will hold.

Japan has an interest in the answer and a role to play in it. An alliance in which the United States carries the burden of basic science, as it has carried much of the burden of defence, is an alliance out of balance. Tokyo has accepted that it must spend more on its own defence. It should accept, too, that it must spend more on the knowledge on which both countries' prosperity and security depend.

There are practical opportunities. Japan is building Hyper-Kamiokande, a successor to the great neutrino

detector in Gifu, with partners from many countries, including the United States, and it is due to begin observations later this decade. Successor projects to IceCube have been proposed. Japanese universities can offer posts to able researchers, American and others, whose work is threatened by cuts elsewhere. Joint funding for joint facilities is the scientific equivalent of burden-sharing.

Friendship in science is not limited to allies in arms. Mr Kagan, a Frenchman, received the Ryoji Noyori Prize from a Japanese society in 2002 and has long been honoured in Japanese chemistry. Science travels across borders more easily than almost anything else, and Japan gains when it is a place where the world's best scientists want to work and to visit.

The tax cut and the long view

This week the Diet began its questions on the prime minister's proposal to cut the consumption tax. This page has argued that the cut must be paid for in full view, and we repeat it. The cost of taking the tax off food alone, about five trillion yen a year by the finance ministry's earlier estimates, is roughly twenty times the annual budget of the Grants-in-Aid for Scientific Research, the main source of funding for curiosity-driven research in Japan.

We do not say that the money should be spent on science instead. Households are under real pressure, and the government is entitled to help them. We say that when a budget is squeezed, the spending that pays off in thirty years is always the easiest to cut, because no one who votes today will see the loss. That is exactly why it must be protected.

Nor is research the only long-term investment at risk. Infrastructure, education and the care of an ageing population all compete with the needs of the present. But research is the purest case, because its benefits are the hardest to foresee and the slowest to arrive.

A conservative government should understand this better than most. Conservatism, properly understood, is about stewardship: preserving and building the inheritance that one generation passes to the next. The scientific strength that produced twenty-eight Japanese laureates in the sciences is such an inheritance. It was built by governments that funded universities steadily in the decades after the war, and it can be squandered by governments that treat research as a line to be trimmed.

Industry's stake

Japanese companies have as large a stake in this as the government. Japan spends more on research and development, as a share of its economy, than most countries, and most of that spending is by companies. But company laboratories, under pressure for returns, have retreated from long-range research, and they increasingly rely on universities for the basic discoveries their products will need.

The chemistry of handedness is a good example. Ryoji Noyori's catalysts, born in a university laboratory, became the basis of an industrial process for menthol within a few years. The companies that profit from such discoveries should be generous supporters of the universities that make them, through endowments and long-term partnerships rather than short contracts for specific results.

American universities draw on endowments built over generations by alumni and companies. Japan's universities have only begun to build theirs. A country that has produced thirty-one Nobel laureates should be able to do better.

What Japan should do

First, restore the basic operating grants of the national universities to a level that allows them to hire permanent staff, and commit to keeping them there. Stable money for people matters more than any single fund.

Second, lengthen the horizon of research funding. Grants of five or ten years for curiosity-driven work, judged on the quality of the questions rather than the promise of results, would give young scientists the freedom that Mr Soai's generation took for granted.

Third, make a research career secure enough to attract the ablest students. That means more permanent posts for researchers in their thirties, fewer short contracts, and less of the paperwork that consumes the days of Japanese academics.

Fourth, treat science as part of the alliance. Co-fund the great joint facilities, welcome researchers whose work is threatened elsewhere, and say plainly to Washington that Japan regards the shared enterprise

of discovery as part of the common defence.

Fifth, celebrate the work, not only the prize. Mr Soai's reaction was famous among chemists long before Wednesday. The country should honour its scientists while they are working, not only when Stockholm telephones.

Sixth, measure what matters. Counting papers and patents every year rewards the safe and the incremental. The best measure of a research system is whether, thirty years from now, its discoveries are still being built upon.

The watch continues

Mr Kagan is 95. He was passed over in 2001, when the prize went to the field he helped to found, and he has lived to see his own discovery honoured. Mr Soai is 76. He said on Wednesday that he had thought nobody would object if he won. Nobody will.

Somewhere in Japan tonight a young researcher is sitting at a bench under a lamp, watching a reaction that may or may not work, on a question that may or may not matter. The prizes of 2050 depend on whether she is still there in ten years, and on whether the country gives her the means to stay.

She will need a lamp, a bench and a salary. She will need colleagues and students, and an institution that does not ask her every year what she has produced. Most of all she will need a country that believes, as Japan once did without question, that the answers to questions nobody has yet thought to ask are worth paying for.

The cartoon has it right. The prize is the work. The least a nation can do is pay for the work.

ANALYSIS

ANALYSIS: 'The Best Method' Still Needs a Number. The Diet Should Not Vote Without One

By Yuki Saito | Economics & Finance Correspondent

Prime Minister Sanae Takaichi told the lower house on Wednesday that cutting the consumption tax was the best method of helping households. She may be right. But a method is not a plan until it has a price and a source of money attached.

Her answer on the funding was that it would be designed after deliberation. That is a perfectly normal thing to say at the start of a policy process. It is a strange thing to say about a measure she has promised to pass in this session of the Diet.

The orders of magnitude are not in dispute. Taking the eight per cent tax off food would cost about five trillion yen a year, by the finance ministry's earlier estimates. A partial cut would cost less, a longer one more.

The prime minister has ruled out deficit-financing bonds. That leaves three sources: higher revenue elsewhere, lower spending elsewhere, or surpluses from funds and reserves that can be used only once.

Each has a constituency that will resist. Higher taxes on companies or on the wealthy invite the opposition of business. Spending cuts fall on someone's programme. One-off reserves can pay for a temporary cut but not a permanent one, which raises the question of what happens when the cut expires.

The bond market is paying attention. The coupon on ten-year government bonds was set at 3.1 per cent this week, the highest since 1996. Investors are not panicking, but they are asking for more to lend to the Japanese state than they have for a generation.

There is also the question of timing. The real wage figures published this week show wages outpacing prices for an eighth month. If that continues, the case for universal relief weakens, and the case for targeted help strengthens.

None of this means the cut is wrong. A reduction in the tax on food is visible, simple and quick, and it reaches every household. Those are real virtues.

But the Diet's job is to vote on measures whose costs it understands. The budget committees, which begin after the leaders' questions, are the place to establish them.

The best method deserves the best scrutiny. The government should publish its options and their costs before the vote, not after.

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ANALYSIS

ANALYSIS: A Raid Is Not a Verdict. But the Brewers Owe Their Customers an Account of How Prices Are Set

By Daisuke Ito | Investigations & Longform

The Japan Fair Trade Commission's compulsory investigation of four brewers is the most serious step it can take at the start of a case. It is not a finding of guilt, and nobody should treat it as one.

Cartel cases are complex. Competitors in a concentrated market inevitably watch each other's prices, and similar price rises at similar times can result from similar costs rather than from agreement. The law punishes agreement, not coincidence.

The commission will have to show that the companies communicated with one another and agreed, in some form, on the prices at which they shipped. That is why it uses warrants to seize documents and e-mails: the evidence of a cartel is rarely in public.

Still, the choice of procedure says something. The compulsory route is reserved for cases the commission considers serious enough for possible criminal charges, cases with a wide effect on people's lives. Beer, sold in every supermarket and bar in the country, meets that description.

The brewers have had a difficult few years: rising costs of grain, aluminium and energy, a shrinking market, and a tax reform that removed the advantage of their cheaper products. Several price increases were justified publicly by those costs.

If the commission finds that the increases were coordinated, the damage to the companies' reputations will be larger than any surcharge. Consumers accepted higher prices on the understanding that each company had set its own.

If it finds nothing, the companies are entitled to say so loudly, and the commission should say so too. Investigations that end quietly leave a stain they do not deserve.

In the meantime the companies could do something useful without prejudicing the case: explain to their customers, in general terms, how their shipping prices are set and how they compete. Transparency is the best defence of a market's reputation.

Japan's competition authority has become more assertive in recent years, with record surcharges on electric power companies in 2023 and a criminal referral in the Olympic bid-rigging case. That is good for consumers, provided it is matched by fairness to the accused.

The process will take many months. The verdict, when it comes, should be judged on the evidence, not on Thursday's headlines.

ANALYSIS

ANALYSIS: Eight Months of Rising Real Wages Is the Best Economic News in Years. Policy Should Not Squander It

By Kenta Sakamoto | Data & Visualization

For most of the past four years, the most quoted number in Japanese economics was a negative one. Real wages, pay adjusted for prices, fell month after month, and the decline summed up the frustration of households watching their shopping bills rise faster than their pay.

That number has now risen for eight months in a row, by 1.5 per cent in August, the first such run in ten years. It deserves more attention than it is getting.

It means the long-awaited combination is finally visible: wages rising steadily after several years of large spring settlements, and inflation slowing enough for the gains to show.

It is not yet secure. The survey's averages are affected by changes in the mix of full-time and part-time workers, and the preliminary figures are often revised. Small companies, where pay has risen most slowly, are partly outside the sample.

Nor is it guaranteed to last. A weaker yen, at about 158 to the dollar early this week, raises the cost of imports and could revive inflation. A downturn abroad could cool the labour market at home.

But the trend is the right one, and three policy conclusions follow.

First, the Bank of Japan, whose policy rate is 1.25 per

ANALYSIS

cent, has more room to normalise interest rates than its critics suppose. Households whose real incomes are rising can bear the higher borrowing costs better than they could a year ago.

Second, the case for relief to all households through the tax system is weaker than it was when real wages were falling. Help aimed at those whose incomes have not kept up, pensioners and low-paid workers among them, would do more good per yen.

Third, the government should do everything it can to keep wage growth going: encouraging investment and productivity, and making it easier for workers to move to better-paid jobs.

Eight months is not a trend that can be taken for granted. It is one that policy should be built to protect.

ANALYSIS

ANALYSIS: Koja's Indignation Is Tokyo's Too. The Alliance Is Strongest When Japan Says So Plainly

By William | Senior Political Analyst

Genta Koja, the governor of Okinawa, told the prime minister on Wednesday of his strong indignation over the killing of a woman in Naha, for which an American Marine has been arrested. The prime minister replied that Japan and the United States would discuss preventing a recurrence.

The exchange was correct on both sides. It was not enough on either.

Mr Koja was elected last month with the support of the governing parties. He is not an opponent of the alliance, and his anger cannot be dismissed as the usual protest of the island's left. That is precisely why Tokyo should listen.

This page supports the alliance with the United States without reservation. It is the foundation of Japan's security in a region where China's military power grows every year and North Korea's missiles fly over Japanese territory.

But an alliance is sustained by consent, and in Okinawa consent is worn thin by every crime committed by a member of the forces the island hosts. Each case undoes years of patient work by commanders and diplomats.

The American forces have responded with the measures they have used before: a suspension of operations and a curfew. Those measures matter, but past curfews were relaxed within months, and Okinawans know it.

What would be different this time is a public, measurable commitment: agreed figures on crimes and incidents, reported regularly; joint patrols with the prefectural police where they help; and a candid review of whether the rules under the Status of Forces Agreement on the custody of suspects still command public confidence.

None of this requires renegotiating the agreement, which neither government wants. Much of it can be done through the joint committee, which should publish more of what it agrees.

The prime minister has spoken of protesting strongly. She should go further and make clear in public that Japan shares the governor's anger, because a government that defends the alliance must also defend the people who live beside its bases.

An alliance whose host community feels heard is a stronger alliance. That is the case to make in Washington, and it is a case an ally should welcome.

ANALYSIS

ANALYSIS: The Asian Games Stumbled in Aichi. The Para Athletes Who Follow Deserve a Smoother Welcome

By Naomi Kato | Culture & Society Editor

The Asian Games in Aichi and Nagoya ended on October 4 with a record 83 gold medals for Japan. The sport was a success. Too much of the organisation was not.

A team kept waiting for hours in a hotel lobby, as Thai media reported in the first days. Buses that failed to arrive. A national anthem played in error, as Kyodo News reported. And now the resignation of the prefectural assembly's vice chairman after a dispute with security guards over his car at a venue.

Each of these is small. Together they suggest a host

that was not as ready as it should have been, and that some of its own officials did not take the rules seriously.

The Asian Para Games open in ten days, on October 18, using many of the same venues, volunteers and staff. The athletes who arrive for them will be even less forgiving of failures in transport and accommodation, because for a wheelchair user a bus that does not come, or a lift that does not work, is not an inconvenience but a barrier.

The prefecture has said it will review the running of the Games. The review should not wait until after the Para Games. Its first findings should be applied now.

Three things matter most. Transport between hotels and venues must be reliable and accessible. Accommodation must be ready when athletes arrive. And officials, from the top down, must follow the same rules as everyone else, as the guards at the gate rightly insisted.

Japan built a reputation for organisation at the Tokyo Olympics and Paralympics of 2021, held in the most difficult circumstances. That reputation is an asset worth protecting.

The volunteers who staffed the Asian Games, most of them unpaid, did much to make them work. They deserve better support from the organisers above them.

The governor and the prefectural government have also drawn criticism locally for remarks about the Thai team. A gracious word to the region's athletes would help.

The Para Games are a chance to finish the autumn well. Aichi should take it.

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CORRECTIONS AND CLARIFICATIONS

The Japan Morning Post corrects errors of fact as soon as they are identified. Correction requests may be sent to corrections@japanmorningpost.com, giving the date, page and headline of the article concerned.

The notes supplied for today's edition give the name of the new chemistry laureate in three different ways, as Kenzo Sugoi, Kenzo Sugii and Sigou; he is Kenso Soai, as the Royal Swedish Academy of Sciences announced. They spell his fellow laureate's name Henri Cagan; he is Henri Kagan. They describe the prize as being for asymmetric autocatalytic reactions; the academy's citation is for the discovery of non-linear effects and autocatalysis in asymmetric organic synthesis.

The same notes repeat errors corrected yesterday: the physics laureate is Francis Halzen, not Harzen; the first of Monday's medicine laureates is Karl Deisseroth, not Deisseros; the American AI developer is Anthropic, not Anthropique; the period in which electric vehicle sales rose two and a half times is the first half of the present fiscal year, not fiscal 2014; and IceCube's last cable was lowered into the ice in December 2010, not in 2011. They place the coining of the word optogenetics in 2005; the first demonstration in Mr Deisseroth's laboratory was published in 2005, and the word followed in 2006.

The notes again give the first stage of the Pacific League Climax Series as Seibu against SoftBank; it is Seibu against Nippon-Ham, and SoftBank, the champions, wait in the final stage. They spell the judoka's name Haruka Kajyu; she is Haruka Kaju. They describe Typhoon No. 27 as moving away and expected to become an extratropical cyclone; the Japan Meteorological Agency's final bulletin says it became one east of the Kuril Islands at 9 p.m. on Wednesday.

The notes date the founding of NASA's Space Task Group, which ran Project Mercury, to October 8, 1958. NASA's histories date the group's formation to November 5, 1958, a month after the agency approved its plan for a piloted satellite on October 7. The item is not run as an anniversary today. The notes also list results from the Asian Games, the Prix de l'Arc de Triomphe, Japan's football match against New Zealand, Tuesday's baseball and other events reported in earlier editions; they are not repeated as news.

THE WEEK AHEAD

THURSDAY, OCT. 8: Nobel Prize in Literature, about 8 p.m. Markets in mainland China reopen. World judo: women's 70 kg, men's 90 kg. Draconid meteors in the evening. Nagasaki Kunchi continues. FRIDAY, OCT. 9: Nobel Peace Prize, about 6 p.m. Midnight curfew begins for American personnel in Okinawa, for 30 days. Takayama autumn festival, to Saturday. South Korean markets closed for Hangul Day.

SATURDAY, OCT. 10: Climax Series first stages: Giants v DeNA at Tokyo Dome, Seibu v Nippon-Ham in Tokorozawa. Typhoon No. 29 forecast very strong. SUNDAY, OCT. 11: World judo championships end with the mixed team event. Typhoon No. 28 forecast extratropical east of Japan. MONDAY, OCT. 12: Sports Day; Izumo university relay; Nobel prize in economic sciences; Typhoon No. 29 nearing the Ogasawara Islands. WEDNESDAY, OCT. 14: Central League final stage at Koshien. OCT. 18: Yokohama mayoral election; Asian Para Games open. OCT. 19 to 29: Exercise Keen Sword. OCT. 29 and 30: Bank of Japan policy meeting.

TYPHOON AND MARINE ADVISORIES

6 a.m. Thursday. No. 28 (Nolo): severe tropical storm near Minamitorishima; 26.7 degrees north, 156.2 degrees east; moving west at 40 km/h; 985 hPa; winds 30 m/s, gusts 45; storm-force winds 130 km all round, gales 330 km north and 220 km south. Forecast: strong typhoon, 980 hPa, by 6 a.m. Friday; about 700 km north-east of Chichijima at 3 a.m. Saturday; extratropical, 984 hPa, about 890 km east of Tokyo at 3 a.m. Sunday. No. 29 (Koguma): severe tropical storm near Wake Island; 16.6 north, 161.7 east; moving north-north-west at 15 km/h; 990 hPa; winds 30 m/s, gusts 40; forecast 950 hPa and 45 m/s from early Saturday; about 510 km east-north-east of Chichijima at 3 a.m. Tuesday. No. 27 (Choi-wan): extratropical since 9 p.m. Wednesday.

Pacific coast of Tohoku: rough seas until about midday Thursday. Ogasawara and Izu Islands and the

EDITORIAL & OPINION

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Kanto coast: swell; high waves likely around the Ogasawara Islands from the weekend. Stay away from the shore. Island ferries: services are decided at short notice. Chichijima: inside the area that could have storm-force winds by early Tuesday. No landfall on the main islands is forecast.

MARKET REFERENCE

Tokyo, Wednesday's close: Nikkei 225 at 70,035.71, down 648.27, the first fall in three sessions; it held above 70,000. TOPIX 4,154.11, down 29.45, after rising briefly in the morning above its August 14 high of 4,197. Sold: AI and semiconductor shares, among them Advantest, Tokyo Electron and Disco, and banks. Ten-year government bond coupon: 3.1 per cent, set on Tuesday. Long-term interest rate on Tuesday: 3.105 per cent. Yen on Tuesday: 158.14 to the dollar. Bank of Japan policy rate: 1.25 per cent; next meeting October 29 and 30. Real wages in August: up 1.5 per cent from a year earlier, the eighth rise in a row.

PHOTOGRAPHS AND MAPS IN THIS EDITION

Front page: the Royal Swedish Academy of Sciences' announcement of the 2026 Nobel Prize in Chemistry in Stockholm, image supplied for this edition, with portraits credited to the Franklin Institute (Henri Kagan) and Tokyo University of Science (Kenso Soai). International: Henri Kagan, from the same announcement (portrait: Franklin Institute). Typhoon page: map of two typhoons supplied for this edition, from Japan Meteorological Agency bulletins issued between 6:45 and 7:05 a.m. on October 8 and the final Choi-wan bulletin of 9:45 p.m. on October 7. Politics: Prime Minister Takaichi at the rostrum of the House of Representatives, file (WPM Productions). Economy: the Tokyo Stock Exchange (TG2, CC). Weather: the Japan and United States maps supplied for this edition. Editorial page: cartoon by Taro Suzuki.

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THE RECORD BOOK

Japan's individual Nobel laureates: 31 with Kenso Soai, 10 of them in chemistry. Japanese chemistry prizes in consecutive years: 2000, 2001 and 2002, and now 2025 and 2026. Henri Kagan: 95, among the oldest laureates; John Goodenough was 97 in 2019. The Soai reaction: published in 1995, 31 years before the prize. Nikkei average: held above 70,000 on Wednesday. Real wages: eight consecutive monthly rises, the first such run in ten years. Typhoon No. 29: the 29th storm of the year, against an annual average of about 25. Largest cartel surcharges ever ordered in Japan: about 101 billion yen, on electric power

companies in 2023.

NOBEL WEEK

Monday, October 5: Physiology or Medicine, to Karl Deisseroth, Peter Hegemann and Georg Nagel, for optogenetics. Tuesday, October 6: Physics, to Francis Halzen, for the detection of high-energy neutrinos from space with IceCube. Wednesday, October 7: Chemistry, to Henri Kagan and Kenso Soai, for the discovery of non-linear effects and autocatalysis in asymmetric organic synthesis. Today: Literature, about 8 p.m. Japan time. Friday: Peace, announced in Oslo, about 6 p.m.; 287 nominations. Monday, October 12: the prize in economic sciences. The prizes are presented on December 10.

PLAY-OFF CALENDAR

CENTRAL LEAGUE: first stage, Giants v DeNA at Tokyo Dome from Saturday, October 10, best of three, the Giants advancing if the series is level. Final stage, Hanshin v the first-stage winner at Koshien from Wednesday, October 14, up to six games, first to four wins; Hanshin start one win up. PACIFIC LEAGUE: first stage, Seibu v Nippon-Ham in Tokorozawa from Saturday, October 10, best of three, Seibu advancing if level. Final stage, SoftBank v the first-stage winner in Fukuoka; SoftBank start two wins up under this season's rule for champions whose opponent finished ten or more games behind or with a losing record. Weekend games are played in the daytime. The final-stage winners meet in the Japan Series.

FESTIVALS AND SKIES THIS WEEK

Nagasaki Kunchi: Suwa Shrine and the streets of the city, to Friday. Takayama autumn festival: Sakurayama Hachiman Shrine and the old town, Friday and Saturday. Draconid meteors: this evening and tomorrow evening, with the radiant high in the northern sky after dark and clear skies forecast across much of Japan tonight; new moon falls at the weekend. Izumo All-Japan University Ekiden: Monday, from Izumo Taisha to the Izumo Dome. Reading Week: October 27 to November 9.

CHEMISTRY TERMS USED TODAY

Chirality: handedness; a chiral molecule cannot be superimposed on its mirror image. Enantiomers: the two mirror forms of a chiral molecule. Racemate: an equal mixture of the two. Asymmetric synthesis: making one enantiomer in preference to the other. Catalyst: a substance that speeds a reaction without being consumed. Autocatalysis: a reaction whose product is a catalyst for the same reaction. Non-linear effect: a departure from proportion between the purity of a handed catalyst and the purity of its product; a positive one is also called asymmetric amplification. Enantiomeric excess: the percentage by which one form exceeds the other.

TYPHOON TERMS USED TODAY

Tropical storm: winds of 17 to 24 metres a second; in Japan this is the lowest class of typhoon. Severe tropical storm: 25 to 32. Strong typhoon: 33 to 43. Very strong: 44 to 53. Violent: 54 or more. Extratropical low: a former typhoon that has lost its warm core and draws its energy from the contrast between cold and warm air; it can remain large and strong. Forecast circle: the area in which the centre is expected to lie with a probability of 70 per cent. Storm warning area: the area that could have winds of 25 metres a second or more during the forecast period. Swell: long waves that travel far beyond a storm.

THE SYMBOLS ON THE WEATHER MAP

A sun: sunny. A cloud: cloudy. A cloud with strokes beneath it: rain. Two symbols joined by an arrow: the first sky gives way to the second during the day. Two symbols separated by a slanting stroke: the first sky, with the second at times. The figure in red is the forecast high and the figure in blue the low observed this morning, in degrees Celsius. On the United States map the figures are in degrees Fahrenheit.

UNITS AND CONVENTIONS

Wind speeds are given in metres a second; one metre a second is 3.6 kilometres an hour, or about 1.9 knots. Pressure is in hectopascals. Temperatures are in degrees Celsius except on the United States map. Times are Japan Standard Time unless another place is named; Japan is at present nine hours ahead of Greenwich, eight ahead of London, 13 ahead of New York, 16 ahead of Los Angeles, seven ahead of Stockholm, Oslo and Paris and five ahead of Baku. Japanese names are given with the family name last. A person arrested is a suspect and is presumed innocent, and a company under investigation has not been found to have broken the law.

USEFUL NUMBERS

Police: 110. Fire and ambulance: 119. Coast guard, for emergencies at sea: 118. Disaster message dial: 171. Police consultation, not an emergency: #9110. Consumer hotline: 188. Anyone who receives a message about a leak, a refund or an account suspension should not follow its links, and should contact the company through its official site or a number found independently. Typhoon bulletins are published by the Japan Meteorological Agency at www.jma.go.jp.

ABOUT THE OPINION PAGES

The editorial states the view of the newspaper's editorial page and is written by its editor; it takes its subject from the day's cartoon. Articles headed Analysis are the judgment of the writer whose name they carry. The news pages report; the opinion pages argue, and say that they are doing so. Letters in reply are welcome at letters@japanmorningpost.com.

SOURCES FOR THIS EDITION

Reports in this edition draw on the Thursday morning papers and Wednesday night's wires: Yomiuri Shimbun, Asahi Shimbun, Sankei News, Nihon Keizai Shimbun, the Japan Agricultural News, Reuters, Kyodo News and NHK; on Daily Sports for the Climax Series rule; on investingLive for China's markets; on the Royal Swedish Academy of Sciences' announcement for the chemistry prize; on the Norwegian Nobel Committee's figures, as reported, for the peace prize; on tenki.jp and the Japan Meteorological Agency for weather; and on the United States National Weather Service for the map of American cities. Where accounts differ the difference is stated.

READER SERVICES

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TOMORROW'S EDITION

Friday's edition carries the Nobel Prize in Literature; the latest track of Typhoon No. 29 as it strengthens towards the holiday weekend; the continuing questions to the prime minister in the Diet; the world judo championships in Baku; and the start of the American forces' curfew in Okinawa.